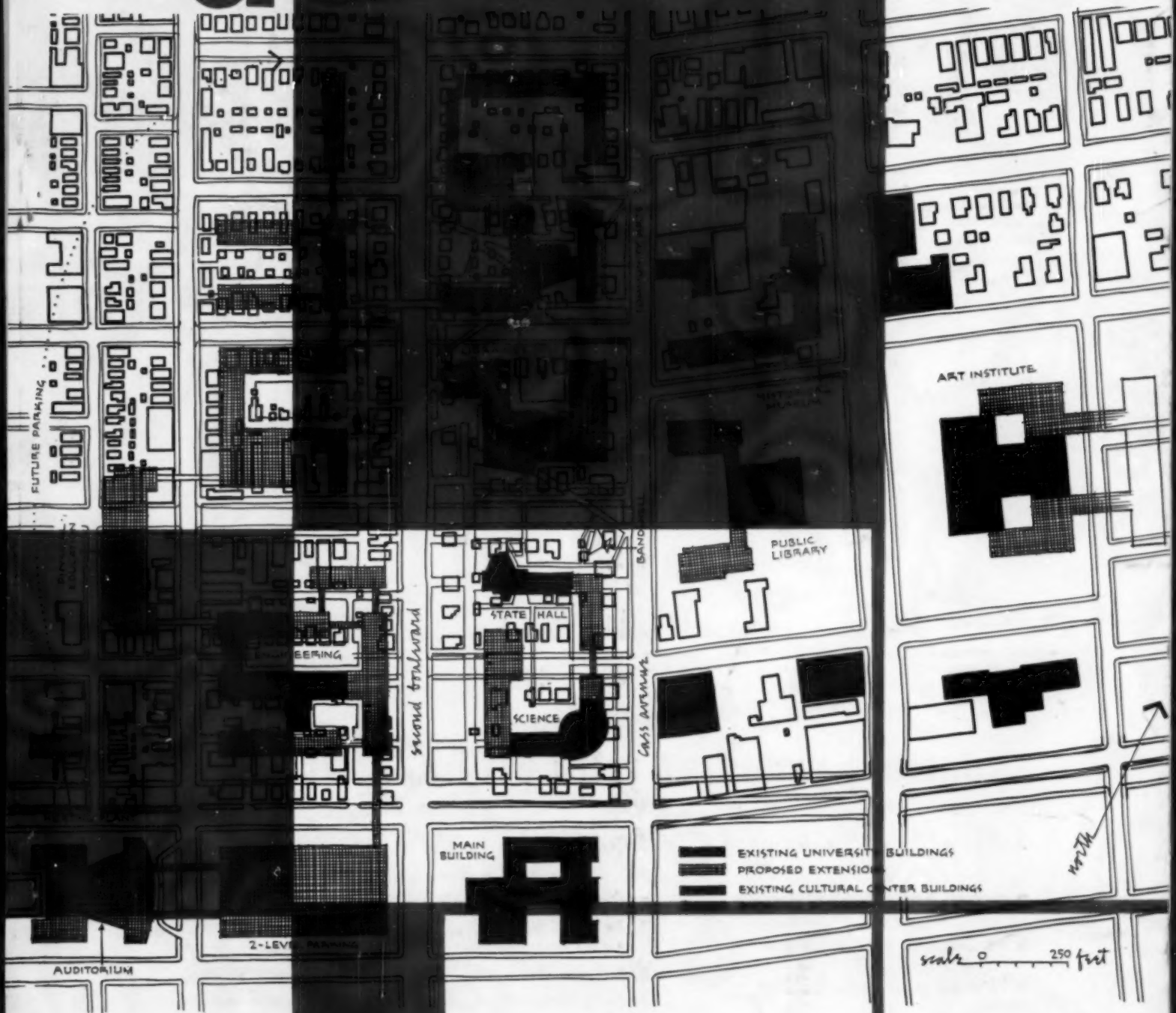
Progressive Architecture



professional services

world's largest architectural circulation

6

june 1955

General Hospital Neurological Building, Philadelphia, Penna. Archt.—Harbeson, Hough, Livingston & Larson; Contr.—McCloskey & Co., Inc.—both of Philadelphia. Pozzolith Ready-Mixed Concrete supplied by The Warner Co., Philadelphia.

St. Joseph's Hospital Addition, Burbank, Calif. Archt.—John W. Maloney, Seattle, Wash.; Contr.—Pozzo Construction Co., Los Angeles. Pozzolith Ready-Mixed Concrete supplied by Jewel City Ready-Mix Co., Beverly Hills.

hospitals

Permanente Foundation Hospital, Los Angeles, Calif. Archt.—Wolff and Phillips, Portland, Oregon; Contr.—C. L. Peck, Los Angeles. Pozzolith Ready-Mixed Concrete supplied by Graham Brothers Co., Los Angeles.

Veteran's Hospital, New Orleans, La. Archts.—Favrot, Reed, Mathes & Bergman, New Orleans; Faulkner, Kingsbury & Stenhouse, Washington, D.C.; Contr.—Robert E. McKee, Dallas, Tex. Pozzolith Concrete batched at job site.

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*See Bureau of Reclamation's current Concrete Manual, Page 130.

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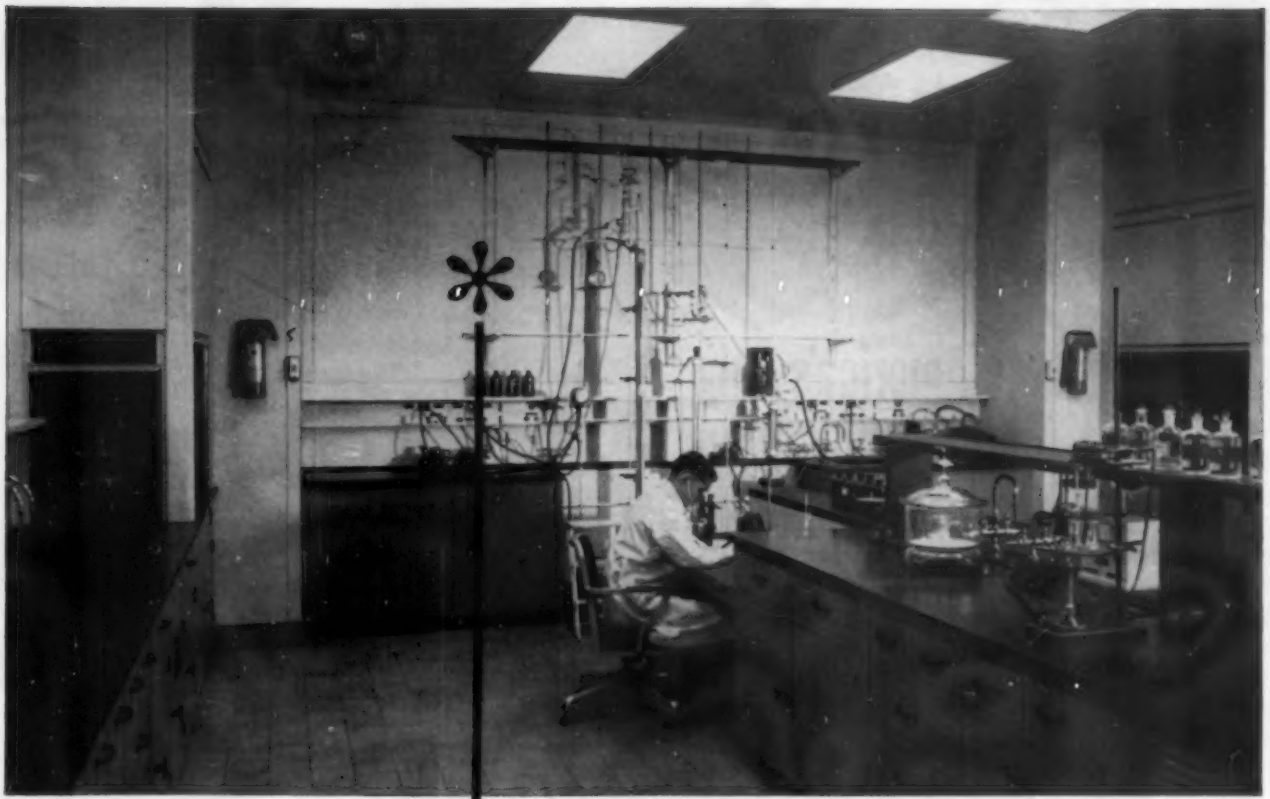

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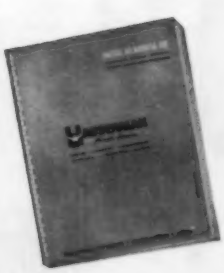

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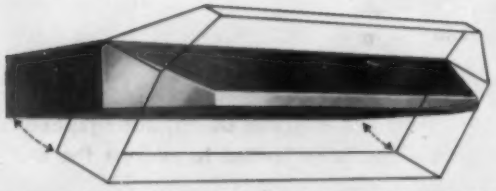

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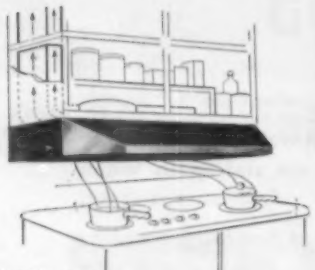
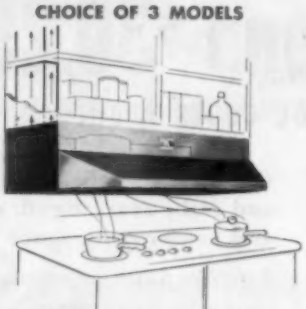


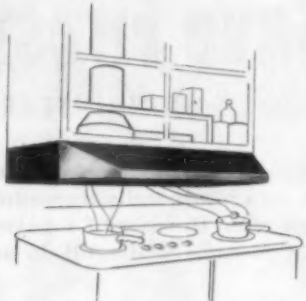
MODEL 400

Fan and Light concealed in cabinet—Hood fastens to bottom of cabinet.



MODEL 500

Completely self-contained—Top section contains Blo-Fan, Recessed Pry-Lite, 3-speed fan control and light switch. Cabinet shelves kept ENTIRELY CLEAR (may be installed so no cabinet space is wasted).



MODEL 300

Builders Special—Equipped with Aerofan and Pry-Lite recessed light which are concealed in cabinet. Hood fastens to bottom of cabinet-fan discharges through it. (Available on special order only.)

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and tilts down

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pa newsletter

June 1955

Principal addresses at AIA Convention in Minneapolis this month will be delivered by HHFA Administrator Cole and Commissioner Follin of Urban Renewal Administration. Leading architect-planners will further develop convention theme, DESIGNING FOR THE COMMUNITY, at two seminars—"Rebuilding the City" and "The Architecture of Community Expansion." Other panel groups will deal with problems of office practice and the architect and his client.

Five buildings won First Honor Awards in AIA's Seventh Annual Competition for Outstanding American Architecture. Awards will be presented at convention to: Ernest J. Kump for North Hillsborough School; Eero Saarinen & Associates for Central Restaurant Building, General Motors Technical Center and for Women's Dormitories and Dining Hall, Drake University; Charles B. Genther of Pace Associates for General Telephone Company of the Southwest; and Ralph Rapson and John van der Meulen for American Embassy, Stockholm, Sweden (a project of Foreign Buildings Operations, Department of State, Leland W. King, Supervising Architect).

Gold Medal for 1955 will be awarded to Willem Marinus Dudok, distinguished Netherlands architect and city planner. Dudok has been invited to address the convention and to receive AIA's highest professional honor.

American Society of Landscape Architects will hold its 56th Annual Conference in Detroit this month, June 26-29. Featured speakers discussing the future obligations and opportunities for landscape architects will include Clair W. Ditchy and Conrad L. Wirth, Director of National Park Service.

The AIA stands opposed to proposed midcity bridge across the Potomac (WASHINGTON PERSPECTIVE, November 1954 P/A) and fully supports Commission of Fine Arts in favoring a tunnel instead. Pres. Clair W. Ditchy emphasized the Institute's interest in restoring basic elements of L'Enfant design for Washington besides preserving beauty of Potomac River and dignity of the many monuments.

P/A was awarded two Certificates in the 1955 Industrial Marketing Editorial Competition, Professional Class. June 1954 issue on "Structural Concepts" won in Best Single Article Category; portrayal of Yale Art Gallery and Design Center, May 1954, won in Best Graphic Presentation Category.

Sen. J. W. Fulbright, receiving Friedsam Medal for service to Arts, May 26, at Architectural League of New York, made an eloquent plea for peace through education. . . . National Institute of Arts and Letters presented Prize in Architecture—first for architecture exclusively—to Gordon Bunshaft, partner and chief of design, Skidmore, Owings & Merrill, New York. Minoru Yamasaki, Detroit, received honorable mention. . . . Dr. Kenneth John Conant, Professor at Harvard University, was awarded Guggenheim Fellowship for studies in Romanesque architecture.

Marshall Shaffer

Architect in charge of Hill-Burton hospital design for USPHS, mentor and friend of thousands of architects, died suddenly at his home in Washington on May 24. Shaffer ran model government agency providing research and advice for private practitioners. Penn State graduate, one-time associate of Neutra, teacher-practitioner, he joined government service in 1941. An active AIA member, recipient of Kemper Award in 1951.

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newsletter

Frederick Gutheim Washington Perspective

Monuments are built by an Administration not at the beginning but near the end of its term of office, and the Eisenhower Administration is just now directing its attention to the great arrears in public building. Renewed Congressional interest in extending the East Front of the Capitol and authorizing new museum facilities for the Smithsonian Institution are straws in the wind that reveal Congressional sentiment. But of all the new building projects, the $10-millions headquarters building of the Atomic Energy Commission is the first to be authorized, and probably will be the most indicative of government architectural trends. New buildings for the Central Intelligence Agency's 8000 employes, the Geological Survey, and other offices are also planned. In the aggregate, these ought to reduce the capital's abnormal central-area congestion and free much park land encumbered by temporary buildings during the war. Decentralized sites are contemplated in most cases. While these and other planning aspects are important, it is the shift in the method of handling public buildings work that is of special significance to architects.

The Atomic Energy Commission's building to house its more than 1200 employes here will be designed and constructed by the Commission itself. This by-passing of the Public Buildings Service is justified in Congress because of presumed security and other special requirements of the building, none of which have yet been really established. It is further strengthened by AEC's position as an experienced large-scale building agency. It carries out the nation's largest construction program, and in recent years has been responsible for as much as five percent of the total national building output. Congress feels that, like the military establishments, AEC should do its own construction work. There are deeper implications. Compelling underlying reasons are the Congressional belief that the Public Buildings Service is unable to produce the building that AEC wants and Congress wants it to have; and the Commission's fear that PBS would give them either "just another government office building" or, worse, would continue its long flirtation with neo-classicism.

This spectacle of a government in search of an architecture is a very illuminating one, even when it formally denies what it is doing. The report of the Joint Committee on Atomic Energy insists that economy will be the AEC's watchword, and "its construction will not entail any special ornamentation or monumental construction"; but the headquarters design will still have to reflect purposes so special that it cannot be built by lease-purchase financing. These unusual design features are needed to deal with the large volume of classified documents and the special security requirements of the AEC, with the perils of wiretapping, the Commission's large technical library, and even Commissioner Libby's small personal laboratory. Plainly, these are not design features so esoteric that PBS could not deal with them, and just as obviously, the private architects who will be retained to work on this project will very likely be the same kind of architects that PBS would engage. What is the difference? Why has PBS been so "well and truly" passed over? The architects here will be working under different direction, and they will be able to give themselves solely to the problems of the AEC, without compromising reference to design standards, specifications, and the presumed requirements of hypothetical other agencies of government who may at some future time be assigned to occupy the building.

The hope for architectural advance comes from the re-establishment of a direct architect-client relationship in which requirement can inspire design. For 20 years the value of such a relationship has been denied by PBS and the Bureau of the Budget. The victory of functionalism over traditionalism is being accomplished in the name of economy and suitability, but there can be no doubt that it is a more far-reaching victory. The AEC building exhibits a desire to do something that "fits the need" and reflects the fear that general-purpose building design won't do it; and it betrays a feeling that PBS (especially under lease-purchase) has become a specialist in cheap utilitarian building and is not competent to direct a job like this where, in the words of one member of the Joint Committee, "we are spending a bit more to get something in the fine arts field."

No plans have yet been drawn, and a site for the AEC building is still to be announced. Very likely it will be in the northwest quadrant of the capital metropolitan area, some 30 miles from the Capitol and accessible by rail and express bus from the central city. The stage is thus set for some expression of public architecture in terms of decentralization, expressways, future helicopter transportation, and the values of comprehensive planning and large-scale construction—the architecture of a nation with consolidated schools, shopping centers, and single-story industrial plants, whose capital is known to most of its citizens through the windows of a school bus.

These potentialities are scarcely a sure thing. If we are to have monuments without stuffy, boring monumentality, some original architectural thinking is in order. Little that AEC has done in architecture commands respect or confidence. Its labs have been anti-architectural; its housing worse. But the President has scored a propaganda coup with his international atomic bank proposal, and followed it up with a scheme for a round-the-world tour of an atomic ship. The design of the international atomic laboratories in Switzerland has left an impression here. So the simple propaganda value of the design of the AEC headquarters cannot be overlooked—and the chance that it will chart a new direction strikes me as excellent.

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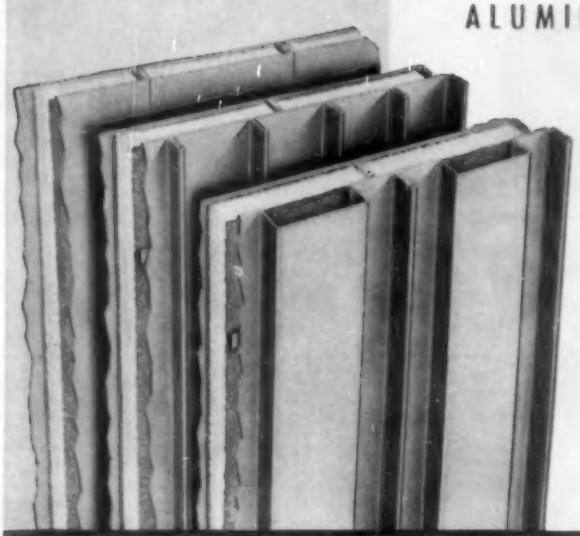

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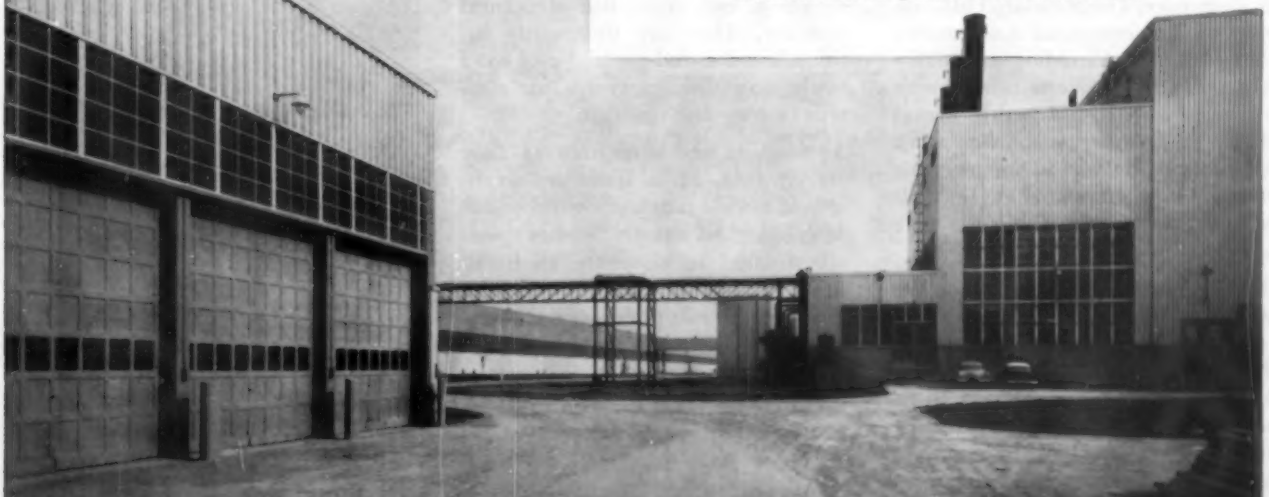

MAHON

The Standard Oil Company of Ohio, Cleveland, Ohio. Architects: Garfield, Harris, Robinson and Schafer

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Faced with the necessity of expansion in office space, The Standard Oil Company of Ohio converted a downtown Cleveland garage building into attractive, efficient, modern offices with interiors of Mills Movable Metal Walls. While other remodeling work on the building was in progress the interiors were fabricated at the Mills factory, permitting Sohio to take early occupancy of its new offices.

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PROGRESSIVE ARCHITECTURE

June 1955

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A FIRE Started in this School....

Its Path was Barred by Multiple Accordion Aluminum!

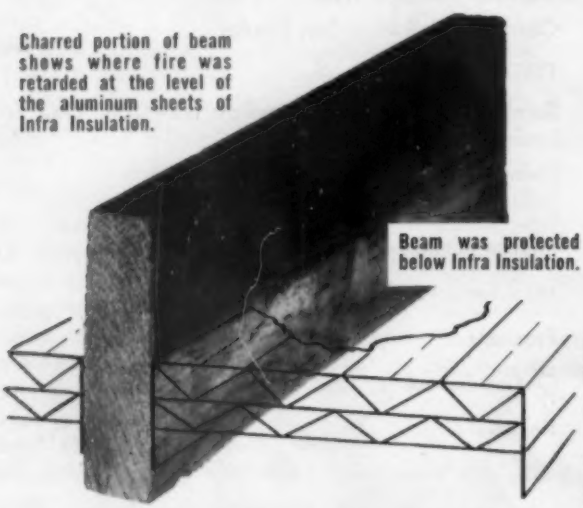
This is the New Bridge Elementary School in New Milford, N. J. When it was built, Arthur Rigolo, the architect, had specified Infra multiple accordion aluminum insulation, Type 6, and it was installed in the ceilings.

In July 1953, the roof of this school was set on fire from the outside. Most of the roof area ABOVE four classrooms was destroyed, but Infra Insulation protected their ceilings. The fire did not penetrate below the insulation.

The *ceiling beams* were found to have been charred by the fire ABOVE the insulation; but the SAME *ceiling beams* were NOT charred below it.

When the roof area was renovated in August 1953, Infra multiple accordion aluminum insulation was *again* installed between the roof beams.

Fires sometimes spread more rapidly when aggravated by Heat-Rays or Radiation; or because of flow of super-heated air. The surfaces of multiple accordion aluminum have a Heat Ray or Radiation absorptivity and emissivity of only 3%, with 97% reflectivity, whether the heat rays originate in the sun, a furnace, a warmed surface or a burning area in a building. Aluminum will not burn. It has a melting point of 1220° F. Even the fiber separators of standard Infra are flame-resistant.


Charred portion of beam shows where fire was retarded at the level of the aluminum sheets of Infra Insulation.
Beam was protected below Infra Insulation.

Photograph of section of ceiling beam removed from New Bridge School when fire damage was repaired.

To obtain maximum, uniform-depth protection against heat loss and condensation formation, it is necessary to use the new edge-to-edge multiple aluminum,* each sheet of which stretches from joist to joist, and also all through the flanges for further vapor protection as well as permanent attachment of each sheet of aluminum.

In addition to reflecting heat by Radiation, which represents 50% to 93% of all heat transferred through building spaces depending on direction of heat-flow, the layers of aluminum and fiber retard convection, or movement of warm air. The alternating air spaces have low density, therefore Conduction through them is slight. The solid aluminum sheets, long and continuous, are almost completely impervious to water vapor. Infiltration under the flat, stapled flanges is slight.

Condensation on or within this type of insulation is minimized by the scientific construction of multiple layers of aluminum, fiber and air spaces.

A very useful and interesting "Radiation Table" listing the Emissivity, Absorptivity and Reflectivity of the Surfaces of a long list of materials has been prepared by Alexander Schwartz, president of Infra Insulation, Inc. It is yours for the asking.

Also yours for the asking is an illuminating discussion of why and how aluminum insulates, even under extreme conditions. It will be found in the booklet "Thermal Test Coefficients of Aluminum Insulation for Buildings," published by the American Society of Heating & Air-Conditioning Engineers. A free copy, and samples of the new insulation sent by us on request.

*Patent applied for

COST OF EDGE-TO-EDGE INFRA
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Type 6-PS about 10¢ sq. ft. Type 4-PS about 8¢ sq. ft.

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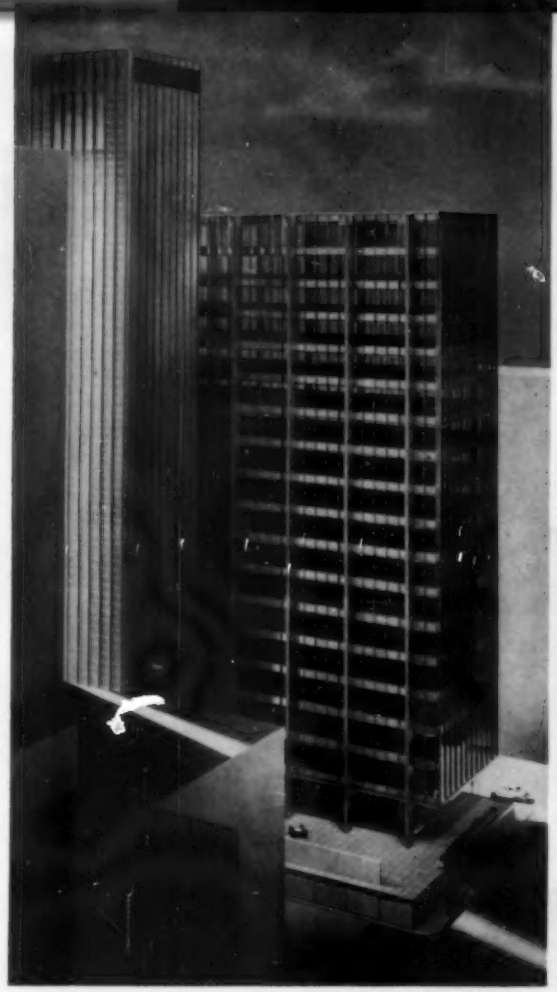
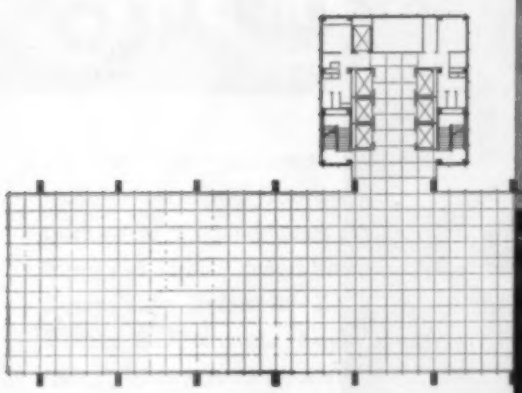
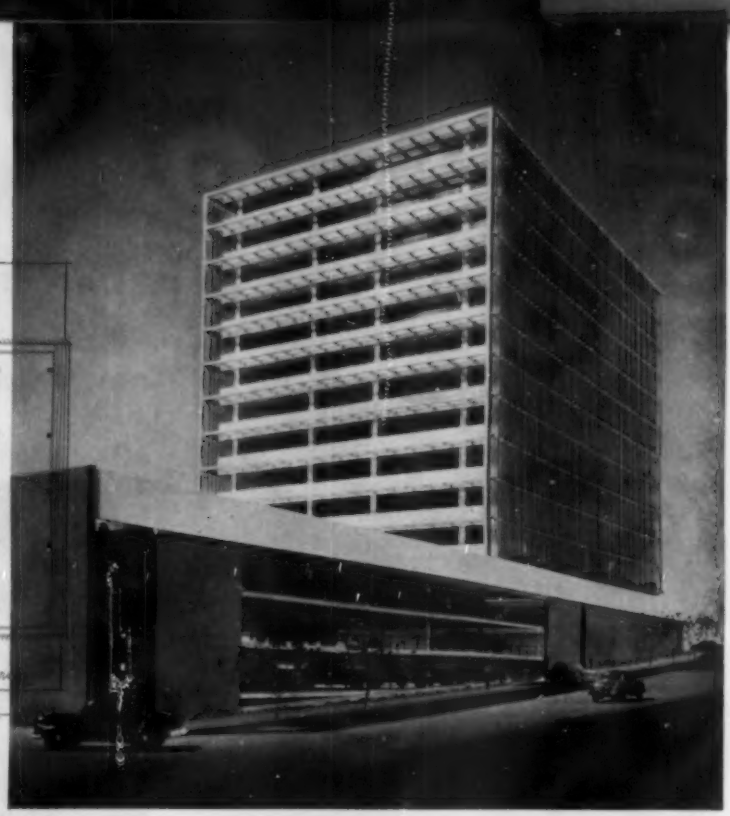
new office building for Chicago, Illinois

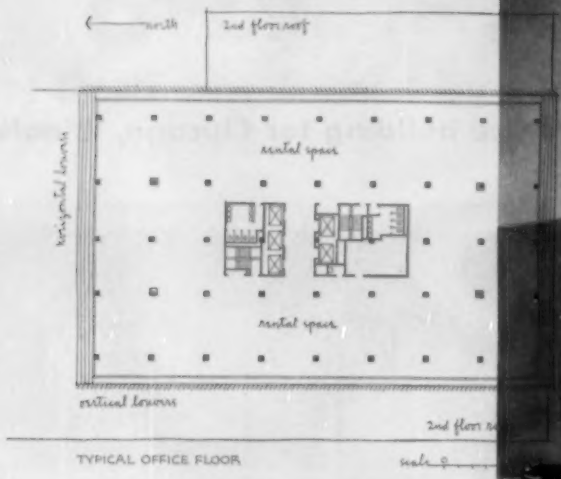


Model photos: Ezra Stoller



Inland Steel Company's new 19-story office building will be located within the Loop, close to transportation and the facilities of the central business area. The main feature of the building, designed by Skidmore, Owings & Merrill, Architects-Engineers, will be unobstructed office floors measuring 177′ x 58′, completely clear of columns and utility lines. This will permit total flexibility in planning office layouts. The large unhampered rental area, unequalled in previous multi-story structures, has been accomplished by locating the columns on the exterior face of the building, and by housing elevators, fire stairs, washrooms, and all utilities in an adjacent windowless stainless-steel tower. Heating, air conditioning, wiring, and piping will rise in the service shaft and be distributed to office areas through cellular floors. The all-welded structural steel frame employs a new type of torsional connection at the spandrel beams, which are faced with stainless steel. Window frames are also of stainless steel, glazed with double panes using blue heat-absorbing glass on the exterior surface. Heating and air-conditioning lines will be carried through the cellular flooring to slots around the perimeter of exterior walls, and through ducts above ceilings to interior spaces. Interior partitions made of steel will be based on a modular system for ease of rearrangement. Cost is estimated at $6 millions; completion is expected in 1957.





new office building for Los Angeles, California

A new 13-story office structure identified as the 3325 Wilshire Building will be erected and owned by the Tishman Realty and Construction Co., Inc., of New York and Los Angeles. Plans by Victor Gruen, Architect, of Los Angeles, New York, and Detroit, consist of two major building components—a 12-story office tower, and a broad structure at its base which will contain garage space for approximately 350 cars, mechanical equipment rooms, rental areas, and entrance lobby. The roof deck of the low structure will provide additional parking and a landscaped terrace accessible from offices at the second story. Typical office floors will have 16,000 sq ft of space with their center areas devoted to elevators, stairs, washrooms, and lobbies. Rental space surrounding this utility core will be divided according to tenants' requirements. Since the building will be completely air-conditioned, windows on all four sides are fixed. Projecting horizontal sunshades on the south and north ends, and vertical louvers on the east and west sides will admit maximum natural light into the office areas but will also protect from direct sunlight. Outriggers supporting the louvers will act also as runways from which outside of windows and walls may be washed. In this steel structure, main girders are to be supported by columns 20′ on center. Completion of this $5-millions building is scheduled for the end of 1955. *Model photos: Gordon Sommers*

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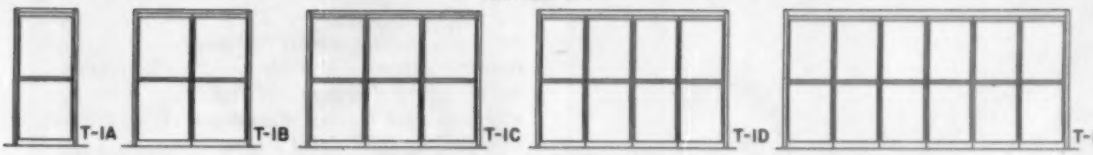
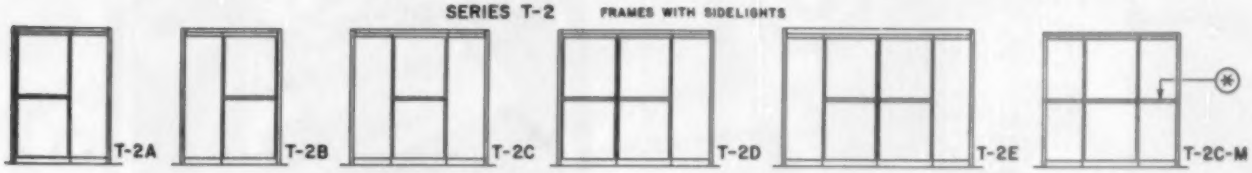
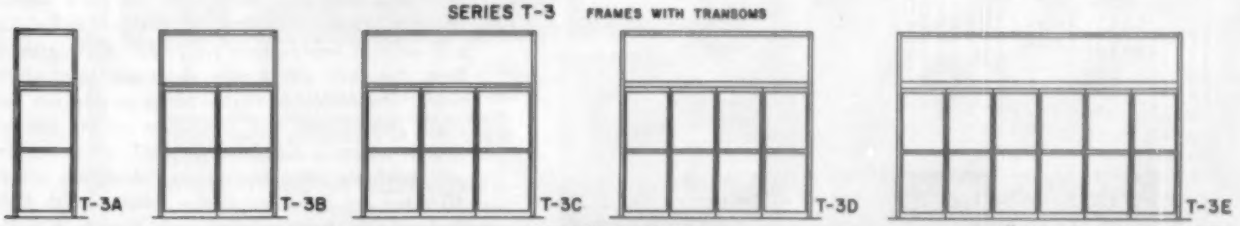


SERIES T-2 FRAMES WITH SIDELIGHTS



SERIES T-3 FRAMES WITH TRANSOMS



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p/a progress preview

***New 36-story office building for New York** has been announced by builder-owners, Tishman Realty and Construction Co., Inc. It will be adjacent to Rockefeller Center to the north, occupying the westerly block front of 200 ft between 52nd and 53rd Streets and extending west 300 ft on each street. Rendering (left) by Architects Carson & Lundin, New York, suggests a structure in harmony with the Center though based on a new double module utilizing windows 6 ft wide and 2½ ft piers. This design permits a greater variety of practical room sizes than the standard 4½ ft window. Another outstanding architectural feature will be an open street floor with pedestrian arcades. Completion of this $40-millions project is scheduled for 1957.*

***New 38-story office building for New York** (below) will feature a plaza along its Park Avenue frontage between 52nd and 53rd Streets. The building will serve as headquarters for Joseph E. Seagram & Sons, Inc., who will occupy about one third of the space. Demolition of the buildings on the site will begin immediately and completion of the $20-millions structure is scheduled for 1957, when the firm will celebrate 100th anniversary. Architects are L. Mies van der Rohe and Philip Johnson, with Kahn & Jacobs as Associate Architects. George A. Fuller Company will be General Contractor; Severud-Elstad-Kruger, Structural Engineers; Jaros, Baum & Bolles, Mechanical Engineers.*

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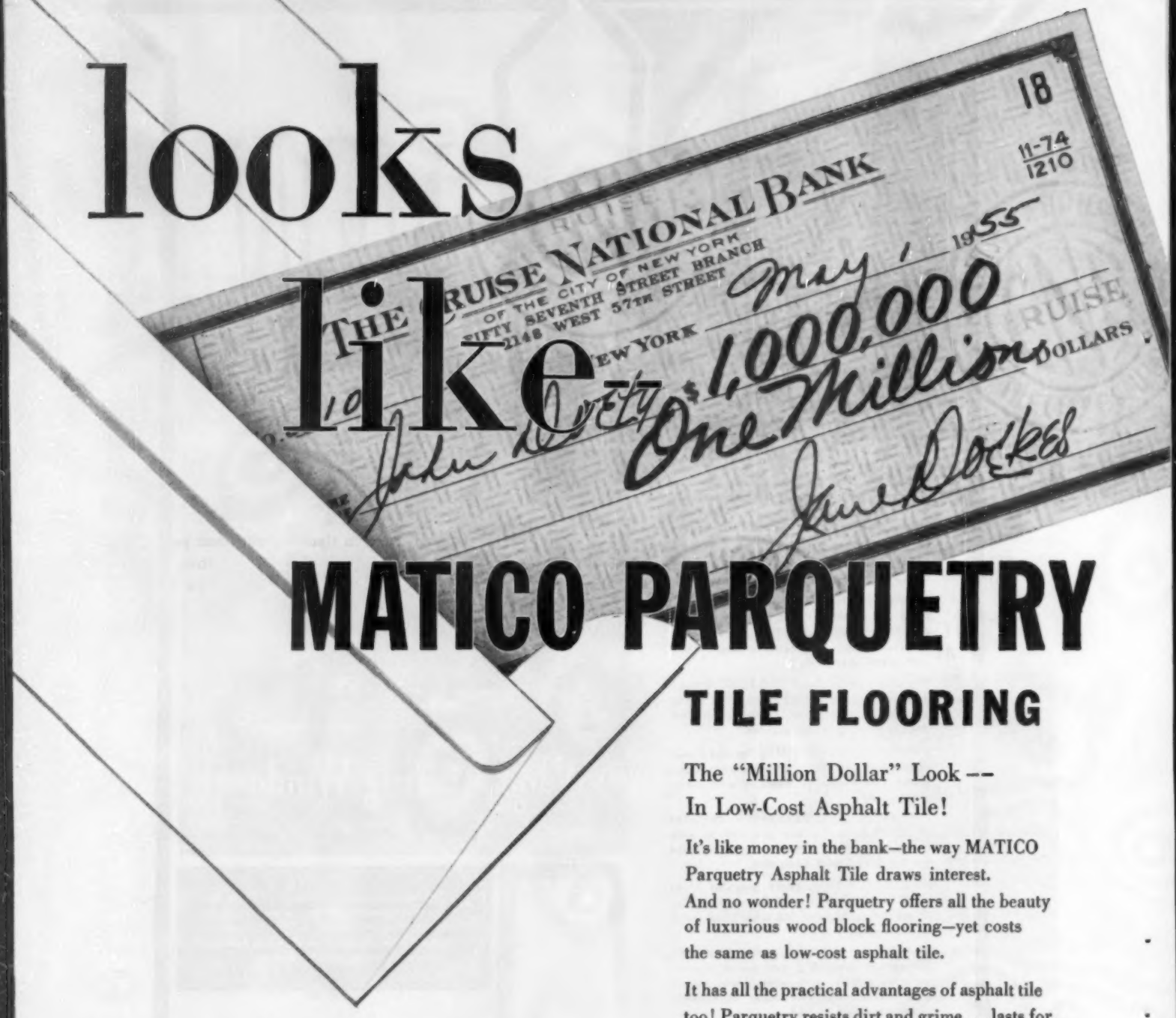

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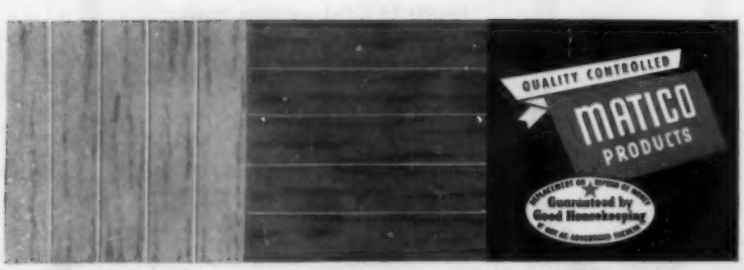

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down with ugliness!

Dear Editor: New York City has the tallest buildings in the world and our skyline is fabulous. Visitors to our shores receive an index to our heritage and future capabilities in all phases of human effort. Rockefeller Center is an example of the art of building tall buildings with dignity. Furthermore, it is one of our most outstanding tourist sites and a successful investment as a development. However, it represents a definite point of departure in the use of Art in Architecture.

As Architect Frank Lloyd Wright remarked, "Any box is more a coffin for the human spirit than an inspiration. . . . Sterilization is again mistaken for refinement."

The thought behind the barrenness in the projects of today is that form follows function. Buildings, like people, should in a sense have some personality. We are swamped into false functionalism. What is functional need not be ugly, but can have grace and beauty; what is ugly is not necessarily functional. Beauty enhances the dignity of man and serves a human need.

If we continue to live in this ugliness and monotony, we shall lose all sense of beauty. The Architect has a definite obligation and should do his best to create as beautiful an environment as he can. There are certain fundamental concepts which mankind has considered beautiful and which actually satisfy basic human needs. Elegant and pleasing structures just seem to grow old gracefully, whenever the deeper insight and appreciation of Art has been used.

It so happens that I am trained and believe with strong conviction that Architecture is the mother of all the Arts, having personal experience with them all. It is fundamental today that the Architects have a working knowledge of real-estate economics and even the hard-boiled approach by the toughest investors, as well as the modern concepts of art, architecture, and engineering. Real-estate restrictions and values, space limitations, and the New York City Building Code demand that our buildings become more vertical. To obtain the maximum building for the minimum cost, with the least actual capital outlay, more than 75 percent of our efforts are spent in solving structural and mechanical problems for these projects. It is the Architect's main responsibility to co-ordinate the wishes of his client for these definite requirements, to make the projects successful and also to inject his own, personal, esthetic touch. Yet, as I look at the UN, Lever House, recent hospitals, and numerous office buildings, now completed or publicized to be soon started, the percentage of Art in the general scope is completely insignificant.

Our multistory designs and new construction advances are spoken of as architectural milestones, in the terms of a new order of function with utility, economy, and beauty. These monstrosities, whether covered with glass, metal, or strips of brick, and possibly two sides with marble for appearance, are still sterile and barren boxes, no matter how you look at and what you do with them. Where are the architectural dignity, elegance, and personality?

I am asking for thought, esthetics, and reflection, and for the Architect's personal expression of these in his work. If we Architects forget our prime esthetic function in the art of building beautifully, we have sent ourselves down the drain. As it is now, the results confronting us are deadening and degrading. Somehow in the development of these coffins without inspiration, having used Rockefeller Center as a concrete example to show where thought went off the deep end, Art has been completely ignored. I am convinced we should bring Architecture back into Art.

As Architects, therefore, we have a definite obligation to the profession and should do our best to create as beautiful structures as we can. I think it is high time we Architects take hold of ourselves and cease being afraid to make a stand which is expected. When we do this we shall also coincidentally provide opportunities for painters, sculptors, and other artists. It will be a healthy sign to the populace and visitors seeking the simple joys of living while growing old gracefully. We can help if we try hard enough.

W. FONTAINE JONES
New York, N. Y.

letters to the schoolmaster

Dearl Carl: Of all the visits to Theleme I enjoyed the last best. After all, there's nothing like a schism in the eternal verities! And you showed rare good judgment in tiptoeing out when you did.

JOHN RANNELLS
New York, N. Y.

•

Dear Carl Feiss: I guess I've read over 60 of your OUT OF SCHOOL articles since I developed the habit, around five years ago. During this time I have never found myself in disagreement with you on important matters, particularly architectural education. But I frequently find myself disagreeing with some of our fellow educators and the thought has begun to disturb me: is it possible that your discourses (about Theleme especially) are so subtle, or so ambivalent, that *everybody* agrees with you? Or have your readers dropped off so that only those who agree keep up with you? Surely you must know that you have had, regretfully, small impact upon the collegiate schools.

The following is a development of *my* theory about Basic Design:

1. Our students come to us with 18 years of experience with "Man in His Environment," and to treat this student as if he were just born or just arrived on another planet is to ignore the marvelous opportunity to channelize, to mold, to graft upon a growth already strong. His experience may be mixed and dimly realized, and there lies our first task: to clarify, to compare, and to select. If, as

(Continued on page 16)

(Continued from page 15)

is so often true, the student is not sure why he has come to us, it is in the past and present inadequacies of his environment that we must find a challenge for him which alone can stimulate him to a creative effort. If this cannot be found, the student should be transferred to another field without the delay of even a year.

2. To maintain the interest through which alone the student will develop, he must be confronted with a problem which is concrete and immediate, and which therefore he can see some reason for attacking. This can only be a problem which refers to him as a Man having physical and psychological requirements, or to persons with whom he has intimate contact, and likewise can only be based on activities with which he is at least becoming familiar. Here is no place for the abstract, the exotic, or the esoteric. A student has no desire for, feels no need of (and therefore will not learn cold) isolated principles of form, of structure, or of anything. *But* . . . and this is most important for it is the only way he ever will learn or retain anything . . . he *does* have the capacity to generalize these or any other principles from a concrete and significant experience which requires their use for a successful solution.

3. There is no assurance that fundamental principles are valid starting points for anything. If we will recall the way we learned our mother tongue, we will see a very effective response to the challenge of the environment, with no recourse to principle until a much later age. A clear grasp of principles, then, is an ultimate refinement, not a beginner's lesson, as the failure to produce fluency in a second language by older high school methods will amply demonstrate.

4. Assuming that a student has been challenged by the inadequacies of his environment, he will see significance only in activities directly devoted to its improvement. He will regard a year's detour into other exercises as a waste of time and a thwarting or dulling of his objectives. He will learn architecture best *in all its ramifications* by starting with architecture not, say, with Sculpture. To ignore this suggests the ruse of the Latin teachers who, when they couldn't sell their subject for its own intrinsic merit, used to say that it was an excellent foundation for the study of French, etc., which was sometimes true, except that French was an even better foundation for French! This form of educational deceit was apprehended and went into discard along with the flapper (or so I had thought). I have nothing against the arts of which Architecture is the mother (do they all have fathers?) but their place must be parallel and secondary . . . they are inferior substitutes.

5. In the abstract approach, there is great danger of undergoing an experience in which the criteria for success are too few. Shall the student be measured by some impossible notion about his spiritual development, or by the product of his hands? In the latter case only a martinet, an over-refined specialist, or a charlatan would claim to see the degree

(Continued on page 19)

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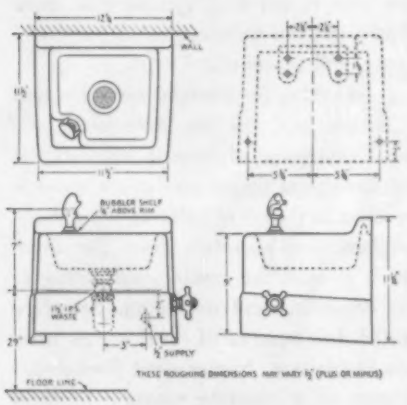

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of successful development attained by each student. The earnest student has had an experience in space, form, etc. (however devoid of purpose, function, or structure), but his lesser brother has only conformed to requirements and gone through certain motions, has learned nothing at all, and we can hardly tell the difference! Having succeeded once with what can only be described as a fake experience, this student may go on confusing form with fake for the rest of his life. Here, perhaps, is the chief origin of the prima donna and the cliché.

6. At any level of education we obviously must be preparing for the future, for the next stage of development, and it is not enough that the professor sees this, the student must be quite clear about it himself. Should he sense that he is progressing down a blind alley, he will not try very hard to get to the end of it. We cannot explain to his satisfaction (because there is no explanation) why everything is reshuffled at the end of Basic Design when, at last, human need, human scale, human functions and structure are introduced. (They are, aren't they?)

ANTHONY ELLNER, JR.
Associate Professor, Architecture
Clemson College
Clemson, S. C.

Alas, I have no illusions about my influence on architectural education but then it would be egotistical indeed to believe that I could be. My role as a commentator these past five years has been only to encourage a little thought on the subject and possibly to stimulate discussion where apathy is the byword. In some measure this has been accomplished. Of course you must not discount my personal pleasure in writing the column—a self indulgence for which I crave no support.

C. F.

revealing commentary

Dear Editor: This is the first time in my young life of 60 years that I manage the audacity to write a letter to the editor. But your column OUT OF SCHOOL (*November 1954 P/A*) is so challenging that I can no longer stay put and just read.

It is, to my way of thinking, a sad if all revealing commentary on how those of us in the driver's seat are afflicted with shortsightedness verging on complete blindness to the forces which, in our materialistic era, are working overtime to demolish the structure of our school system stone by stone, and consequently the faith that all good Americans should have in their Democracy, lest dictatorship take over and render us helpless by spreading ignorance through our ranks.

It is rather unfortunate that, through fear and hysteria, we should be constantly seized with an inferiority complex that

(Continued from page 16)

always uses Russia as the yardstick by which to measure our intellectual and productive capacity.

While it is right not to lose sight of Russia's war potential, it is utterly naive, if not stupid, to attempt to fashion our school system after Russia's imperial and compulsory system. If we are ever to

(Continued on page 20)

Beautiful in its simplicity, gratifying in its low cost. Shelter House, Sunset Park, Manhattan, Kansas, Raymond E. Lippenberger, architect.

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(Continued from page 19)

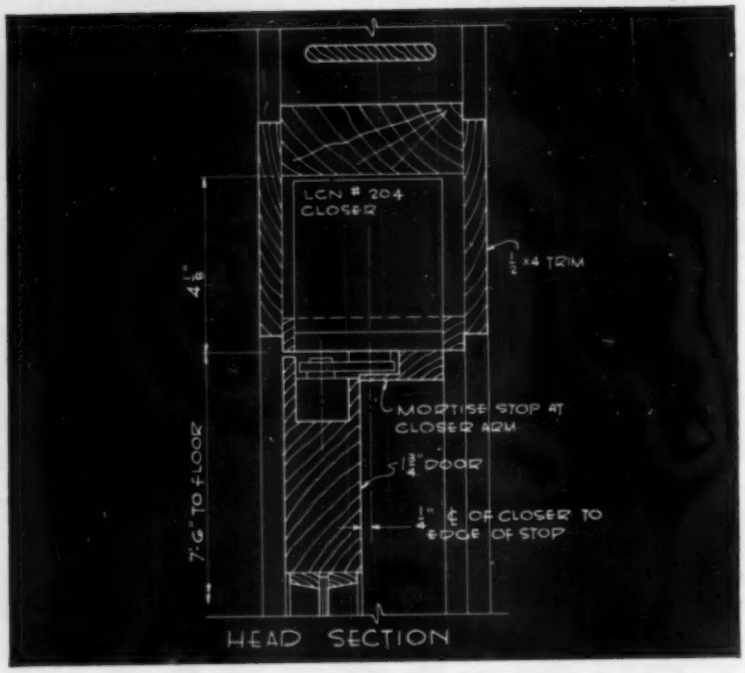
bring improvement to our own system it will not be accomplished by compulsion but by recognizing, first, the fact that our teachers are an integral part of our social entity and as such must share fully in the blessings of our higher standard of living. If our industrialists and producers must have an incentive to give us the better things of life it is equally essential that our teachers have an incentive to enable them to give us a school system worthy of the name. Something along the lines of a balanced merit system free from politics and selfish interests —remembering that this is still a free country where our youngsters are free to choose their own vocation; whereas, in Russia, it is the wish of the high authorities that guides their destinies regardless of their greater aptitudes in professions of their own choice. General Sturgis' assertion that youth only has the monopoly on inventive genius is rather fantastic, childish, and, to say the least, very unfair to the older hands of the engineering profession whose brilliant accomplishments are reflected in the modern machinery that we enjoy today. His implication that a college degree is all that is required for the engineer's completion of his education doesn't hold water.

We come out of school with some fine watch-precision theories, masters of mathematical braintwisters that would stump the greatest of atomic scientists. Yet, we are unable to assemble a watch with all its component parts in their proper places so that it can run. The result is that if we want to go into the watchmaking business we must start our studies all over again in order to comprehend what makes it tick, and by the time we become proficient in that specialty, age will have crept up on us considerably. Thus, willy-nilly, we come to realize that the evolution of time and experience is the measure, not only of our greater wisdom but also of our ability to fashion mechanisms of great complexity. An ability that always extends into good old ripe age.

Such are the facts of life in every walk of our society. Now we come to the defense of this country:

The intemperate waste of engineering talent and ability inherent in the old-timers of this country, as suggested in the General's dissertation, cannot but have the most injurious effects upon the morale of the population as a whole, as unwittingly it tends to create an unfillable void between the cradle and the grave out of which the very soul of the nation could not be extricated in its time of greatest peril, because it ignores that the home of the humble toiler is the foundation upon which rests the structure of this great Republic. Then by denying the old-hand engineer the opportunity to maintain his home and raise his offspring in decency and honor; to work up a competence for the twilight of his life; is, by its own ignorance of human values, destroying the very incentive youth needs plenty of before choosing engineering as a career. The way it looks now we have a great many handlers of bread and milk routes and many others operating oil stations who have their homes decorated with college degrees.

JOSEPH A. ROY
Cleveland, Ohio



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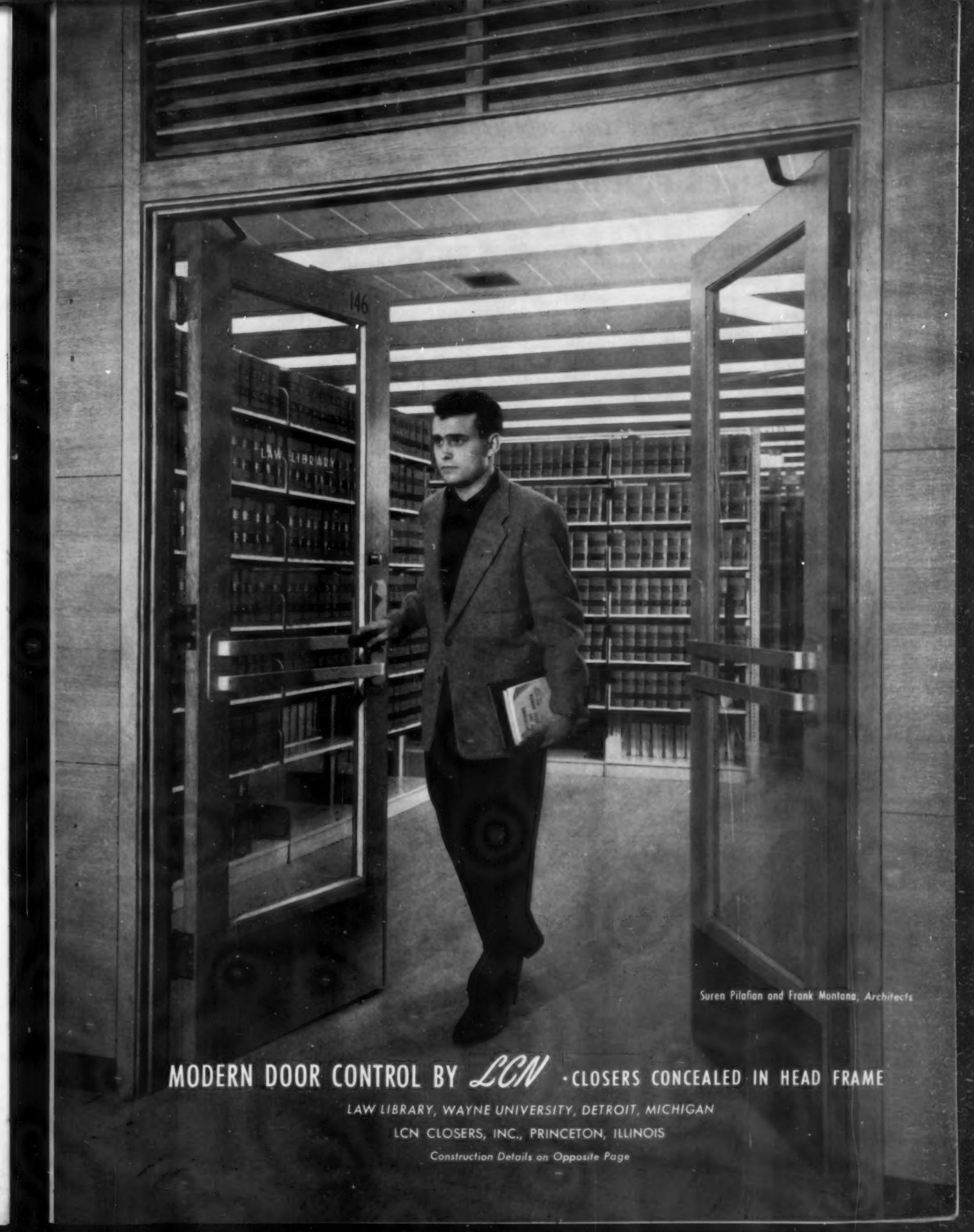
or See Sweet's 1955, Sec. 17e/L

LCN CLOSERS, INC., PRINCETON, ILLINOIS



Suren Pilafian and Frank Montana, *Architects*

MODERN DOOR CONTROL BY *LCN* · CLOSERS CONCEALED IN HEAD FRAME

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LCN CLOSERS, INC., PRINCETON, ILLINOIS

Construction Details on Opposite Page

Factors that influence the selection of . . .

ADHESIVES FOR RESILIENT FLOORING

The life and serviceability of any resilient flooring installation depend greatly upon the proper application of the correct adhesive which will meet its specific installation requirements. Frequently, the selection of the proper adhesive is as important as the selection of the floor itself. To bond properly, the adhesive must hold the flooring material to the subfloor by surface attachment. This surface attachment, or bonding strength, must be great enough to prevent the separation of the flooring material from the subfloor under stresses slightly greater than those encountered in normal use. At the same time, the bond must not be so strong that it will be too difficult to remove the resilient flooring at a later date if necessary.

Factors to Be Considered

The type of subfloor, its condition, and the kind of resilient flooring material to be installed are important factors in the selection of the adhesive. Below-grade subfloors, for example, may require a different type of adhesive than suspended subfloors, and asphalt tile must be installed with a different adhesive than linoleum. The adhesive selected must also bond the resilient floor securely to the subfloor without chemical or physical damage to the flooring material. It should also be easy to handle and apply. It should develop and retain the correct "tack" or gripping power throughout the desired working period. The adhesive must have correct viscosity. If it is too thin, it will penetrate too deeply into the material and the bonding power will break down due to lack of sufficient adhesive at the surface. For this reason, resilient flooring adhesives should never be thinned except as specified by the manufacturer.

Because the various types of resilient floors available are designed to meet specific flooring requirements, it is necessary that the adhesive used in their installation meet the same requirements. As a guide in the proper selection of adhesives, the Armstrong Research and Development Center has prepared the chart shown on the opposite page as well as a brief description of each adhesive.

Armstrong No. S-128 Paste is an all-purpose adhesive developed for the installation of linoleum, Linotile, Corlon, rubber tile, Service Gauge Excelon Tile, the various linoleum and Corlon tiles, and lining felt over suspended subfloors. It has a sulphite liquor base and is water soluble.

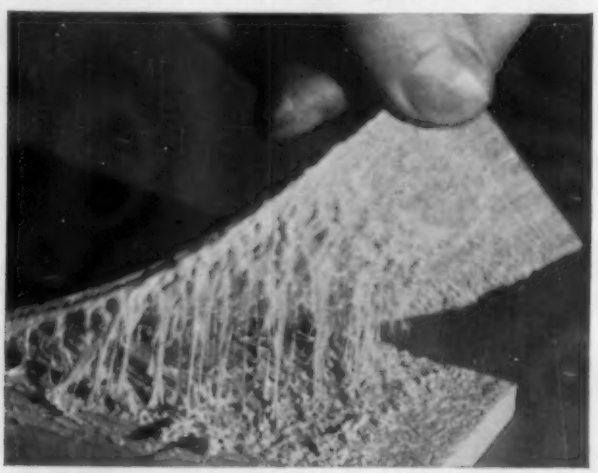
Armstrong No. S-130 Resilient Tile Paste was formulated especially to simplify and speed the installation of Linotile, rubber tile, cork tile, linoleum tile, Corlon tile, and lining felt over suspended subfloors. It develops a quick tack and keeps tiles from sliding or moving while mechanics work over finished areas.

Armstrong No. S-225 On-Grade Cement is an alcohol base cement which is both alkali- and moisture-resistant. It is designed for installation of both rubber tile and Custom Corlon Tile over on-grade floors. It should not be used below grade.

Armstrong No. S-80 Primer is used to minimize moisture as well as to seal porous and dusty concrete subfloors for asphalt tile and ⅛" Excelon Tile installation. It also prepares the subfloor for the proper adhesive selected for the installation of asphalt tile or ⅛" Excelon Tile. It is a very thin "cut-back" asphalt.

To insure adhesives of uniform quality, the Armstrong Research Laboratories continually test the bonding strength of adhesives before and after "setting." Below, is the "stripping test," one of many used. It measures the bonding strength between the subfloor and the flooring material after setting.

The bonding strength of any adhesive is determined by its cohesive strength as well as its ability to adhere to surfaces of both materials being bonded. The test strip below illustrates desired adhesion between the subfloor and the flooring material surfaces and also shows integral cohesion strength.



Armstrong FLOORS

LINOLEUM

PLAIN
SPATTER®
TEXTELLE*
JASPÉ
RAYBELLE®
ROYELLE®
MARBELLE®
DECORAY*
CRAFTLINE® INLAID
EMBOSSED INLAID
STRAIGHT LINE INLAID

Table of recommended adhesives for the installation of Armstrong resilient floors

Type of Resilient Floor	Wood Hardboard & Plywood	Concrete Suspended	Concrete On Grade	Concrete Below Grade	Ceramic Tile Terrazzo or Marble Suspended	Terrazzo or Marble On Grade	Steel	Magnesite	Floor Fill	
									Asphalt Type	Latex Type
Linoleum Corlon	S-128	S-128	Don't Install	Don't Install	Rough S-128 Smooth S-214	Don't Install	S-214	Special Recommendation by Armstrong	S-128 or S-214	S-128
Linotile	S-130 or S-128	S-130 or S-128	Don't Install	Don't Install	Rough S-130 or S-128 Smooth S-104 or S-214	Don't Install	S-104 or S-214	Special Recommendation by Armstrong	S-214 or S-225	S-130 or S-128
Rubber Tile and Custom Corlon Tile	S-130 or S-128	S-130 or S-128	S-104 or S-225	S-104	Rough S-130 or S-128 Smooth S-104 S-225 or S-214	S-104 or S-225	S-214 S-104 or S-225	Special Recommendation by Armstrong	S-214 or S-225	S-130 S-128 S-225 or S-104
Cork Tile	S-130 or S-214	S-130 or S-214	*S-214	Don't Install	S-214	S-214	S-214	Special Recommendation by Armstrong	S-214	S-130 or S-214
Linoleum Tile	S-130 or S-128	S-130 or S-128	Don't Install	Don't Install	Rough S-130 or S-128 Smooth S-214	Don't Install	S-214	Special Recommendation by Armstrong	S-214	S-130 or S-128
†Asphalt Tile and ⅛" Excelon Tile	S-80 Primer S-160	S-160 or S-90	S-160 or S-90	S-160 or S-90	S-160 or S-90	S-160 or S-90	S-160 or S-90	S-80 Primer S-160 or S-90	S-160	Don't Install
Conductive Asphalt Tile	S-80 Primer S-160	S-160 or S-90	S-160 or S-90	Don't Install	S-160 or S-90	S-160 or S-90	S-160 or S-90	S-80 Primer S-160 or S-90	S-160	Don't Install
Service Gauge Excelon Tile	S-128 S-130 or ‡S-90	S-128 S-130 or S-90	S-90	S-90	S-90	S-90	S-90	S-80 Primer and S-90	S-214 or S-225	S-128 or S-130
Lining Felt Install with No. S-128 or S-130 unless otherwise noted	*Must* for burlap back linoleum and most resilient tiles. *Optional* for felt back sheet linoleum, Corlon, asphalt and Excelon Tiles.	Optional for all floors	Don't Install	Don't Install	Optional for all floors Install Rough S-128 or S-130 Smooth S-214	Don't Install	Optional for all floors Install with S-214	Special Recommendation by Armstrong	Optional for all floors Install with S-128 or S-130 or S-214	Optional for all floors Install with S-128 or S-130

† Dusty and porous concrete subfloors should be primed with No. S-80 prior to the installation of asphalt tile or both types of Excelon Tiles with S-90 or S-160. Asphalt tile and both Excelon Tiles should be installed over lining felt on wood subfloors. S-80 Primer is not required with lining felt. Where asphalt tile and both Excelon Tiles are installed direct to plywood or hardboard, it is necessary to use S-80 Primer.

‡ The use of lining felt with service gauge Excelon Tile is optional over plywood and hardboard.

* Cork tile may be specified for certain grade-level installations where the floor surface of the concrete slab is at least 12" above grade level and the ground slope is away from the building. The subfloor should be well cured and visibly dry. The cork tile shall be installed with No. S-214 Waterproof Cement. Rubber tile and Custom Corlon Tile shall be installed with No. S-225 On-Grade Cement or No. S-104 Chemical-Set Cement.

Armstrong No. S-90 Asphalt Cement is recommended for below-grade installation of asphalt tile or Excelon Tile, especially if the subfloor is subject to or shows signs of dampness. It is a cut-back asphalt-type cement and is especially resistant to both alkali and moisture.

Armstrong No. S-160 Emulsion is an all-purpose adhesive for the installation of asphalt tile and Armstrong ⅛" Excelon Tile over suspended, grade-level, and below-grade subfloors. It is a water emulsion of asphalt and is resistant to both alkali and moisture.

Armstrong No. S-104 Chemical-Set Waterproof Cement is a special-purpose adhesive developed for the installation of Armstrong Rubber Tile and Custom Corlon Tile over below-grade concrete subfloors. It is also used to install certain floors to steel, terrazzo, ceramic tile, and other non-porous surfaces, and where excessive surface moisture is unavoidable. This adhesive consists of two elements, one a liquid, the other a powder, which are mixed on the job and must be installed within a specified time.

Special Problems

Frequently, unusual conditions such as extra-high alkalinity in concrete or magnesite subfloors will necessitate special adhesive recommendations. In such instances, Armstrong will be glad to furnish additional information which will be of help in determining the proper adhesive.

In order for architects to be sure that the proper adhesive is being used, it is suggested that they specify the adhesive or specify that the flooring contractor use the adhesive recommended by the manufacturer of the flooring being installed.

PLASTICS

CUSTOM CORLON® TILE
EXCELON® TILE
MORESQ* CORLON TILE
DECORESQ® CORLON
GRANETTE® CORLON
TERRAZZO* CORLON
MORESQ CORLON

RESILIENT TILES

ASPHALT TILE
Standard
Greaseproof
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RUBBER TILE
LINOTILE®
CORK TILE
CUSTOM CORK TILE
LINOLEUM TILE

* Trade-Mark

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No two of these buildings are alike in architectural concept. Each has an individual cooling and heating problem. But all have one thing in common: in every one of these outstanding buildings, and others like them, Tuttle & Bailey High Pressure Air Distribution Units are providing maximum comfort for occupants, efficiently and economically.

No matter what the system design called for — cooling only, heating only, or a combination of both — the wide range of T & B units permitted selection of equipment to meet the *exact* requirements.

Real savings in overall building and installation costs resulted from the installation of high pressure systems. Conduit risers, and a reduction in the number of supplementary equipment rooms, added much more useable — and rentable — floor space. Conduit branches reduced floor-to-floor dimensions.

For complete information on the advantages of a high pressure air distribution system in new construction or for remodeling, get in touch with your nearest Tuttle & Bailey Representative or write for Catalog No. 109 and Bulletin No. 110.

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Architect: Skidmore, Owings & Merrill, N. Y., N. Y.

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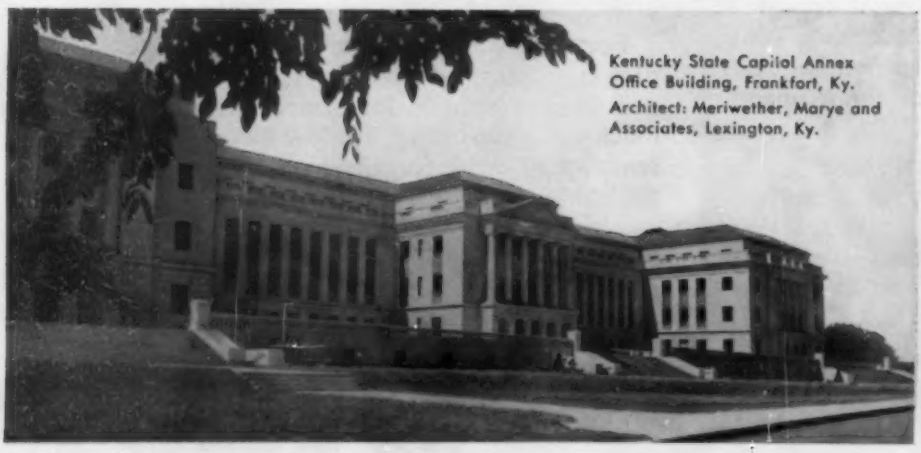
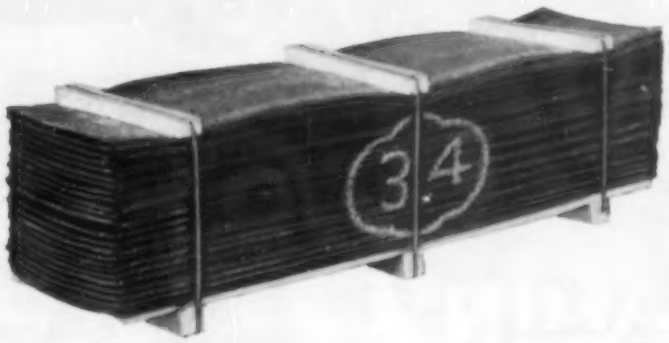


Kentucky State Capitol Annex Office Building, Frankfort, Ky.
Architect: Meriwether, Marye and Associates, Lexington, Ky.

architectural news

AND WHEELING METAL LATH!

Now in the new Engineered Metal Lath PACKAGE®....



What do these four diverse building projects all have in common? Smooth, crack-free plastered walls . . . walls that will keep their trim, sleek look for years because they all have a firm foundation of Wheeling Metal Lath. But Metal Lath has an economy side, too. Just see the page at the left for solid saving reasons. You'll see why Wheeling Metal Lath and plaster play such an important role in so many buildings that make architectural news.

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Greater Pittsburgh Airport, Pittsburgh, Pa.
Architect: Joseph Hoover, Pittsburgh, Pa.

Dante Place Housing Project, Buffalo, N. Y.
Architect: Backus, Crane & Love, Buffalo, N. Y.

With this **ANNOUNCEMENT** of Porcenell Chalkboard, it is not an overstatement to say that a new concept in modern school chalkboard history begins. BENJAMIN ELECTRIC, long a pioneer in lighting, is proud to follow its advancements in school illumination with this further advancement in better seeing and instruction.

Never before a CHALKBOARD like this!

Writing and Erasing are a Pleasure!

Chalk "flows on" with minimum pressure due to micro-fine, super-hard, "suede-coated" surface which also facilitates erasure; eliminates ghosts.

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Easier, Lower Cost Maintenance

Quicker, "care-free" cleaning with water restores board to original efficiency; there are no deep pores to retain chalk particles; dulling is thus eliminated.

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Never needs replacement due to age . . . will not become shiny in a lifetime of normal use; cannot fade . . . completely resistant to moisture . . . cannot warp.

Porcenell Triumphs Over the Cost Problem to Bring All Wanted Features Within the Means of All! New materials, methods and lighter weight steels cut initial cost; make possible easier and lower cost installation.

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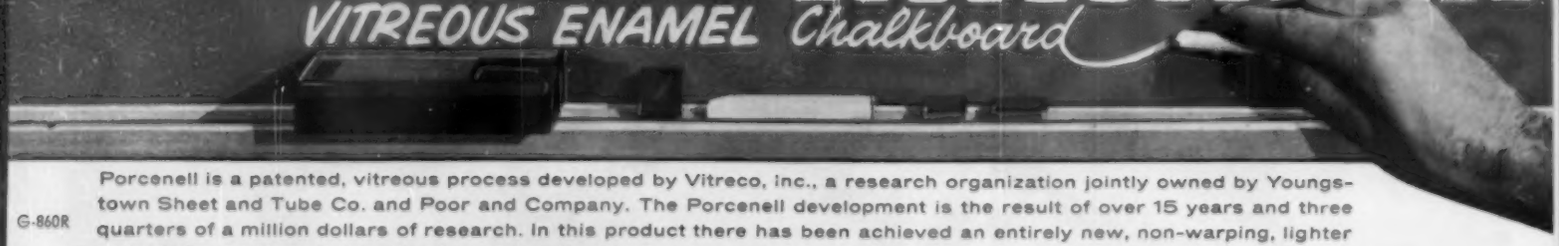

G-860R

Porcenell is a patented, vitreous process developed by Vitreco, Inc., a research organization jointly owned by Youngstown Sheet and Tube Co. and Poor and Company. The Porcenell development is the result of over 15 years and three quarters of a million dollars of research. In this product there has been achieved an entirely new, non-warping, lighter weight, finer, vitreous, hard chalkboard surface never before commercially available.

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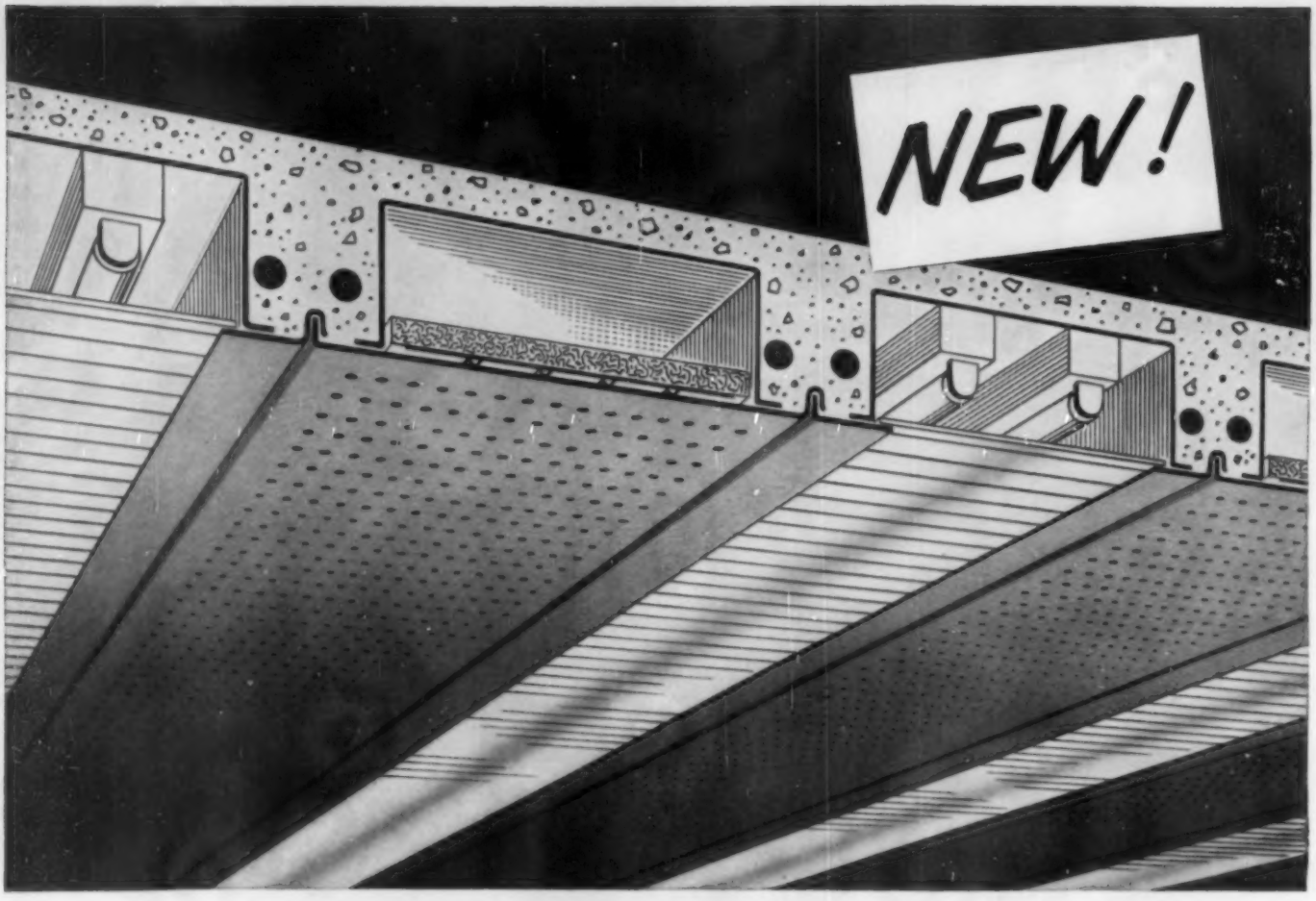

Here's how the New Fenestra TAC Panel System works! Troffer or acoustical panel units—each 24 inches wide—may be arranged in any combination.

A noncombustible acoustical element is "built in" the acoustical panels. Minimum-cost fluorescent fixtures and plastic diffusers are installed in the troffer panels to provide recessed lighting.

Long-span design makes for quick erection, and the panels need support only on the ends and at mid-span while concrete is being poured. This reduces cost of shoring usually required.

Complete erection service under Fenestra supervision is available in many areas.

Since the TAC Panels carry no building loads after the concrete has cured, all fire-resistive ratings are based on the reinforced concrete structural system.

PROVEN IN MICHIGAN SCHOOL BUILDINGS

TAC Panels in place, ready for pouring concrete at one of 14 Michigan schools now under construction with this new system. See how the long span design reduces shoring requirements to only mid-point support. **Marsh School**, Detroit, Michigan. *Architect:* C. Gabler. Detroit Board of Education, George L. Schulz, *Consulting Architect. Contractor:* Ellis Construction Co.

Here's a quiet, well-lighted classroom . . . the result of TAC Panel construction. Maintenance costs are low, because the ceiling can be washed or painted as needed, without reducing the acoustical efficiency. The plastic diffusers are easily removed for servicing lighting fixtures. **Pasteur School**, Detroit, Michigan. *Architect:* Leo M. Bauer. *Contractor:* Maurice Strandberg Co.

An ideal ceiling for gymnasiums and multi-purpose rooms. The acoustical treatment "built in" the cellular steel panels cannot be damaged by balls thrown against it. The recessed lighting fixtures are economically protected by wire guards. **Gompers School**, Detroit, Michigan. *Architect:* Donaldson & Meier. *Contractor:* A. W. Kutsche & Co.

FENESTRA TROFFER-ACOUSTICAL PANEL SYSTEM CUTS COST OF REINFORCED CONCRETE SCHOOL CONSTRUCTION

Multi-purpose Steel Panels provide long-span forms for concrete joists *plus* acoustical ceilings and recessed lighting troffers *built right in!*

Multi-purpose is the key to economy in school construction. The NEW Fenestra* Troffer-Acoustical Panels (TAC Panels, for short) are designed for multi-purpose use of materials and construction labor. They permit you to have acoustical treatment and lighting—features that usually require extra time and labor—*built right in the structure itself.*

Money is saved because 3 expensive building materials are wrapped up in these economical building panels: (1) the forms for concrete joist construction, (2) metal pan acoustical ceilings, and (3) recessed lighting troffers.

Time is saved because the structural floor for the rooms above and the acoustical ceiling and lighting system for the rooms below are completed at the same time . . . with only paint, finished flooring and installation of fluorescent fixtures to be done after the concrete has cured.

And, this new building system gives you better-looking, better-lighted classrooms that are easier to maintain, year after year. The ceilings can be washed or repainted as often as needed, without affecting the acoustical treatment. There is no hanging ceiling or "stuck on" acoustical material to be damaged or replaced.

Investigate the New Fenestra TAC Panel System now. Even if you have plans on the drawing board, they may easily be adapted to use it. Write today for your copy of the new brochure, *Fenestra TAC Panel System.* Detroit Steel Products Co., Dept. PA-6, 3409 Griffin Street, Detroit 11, Michigan.

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NEW! TROFFER PANEL for Fenestra "D" Panel Construction in one-story schools

Now you can have *built-in* troffer lighting in one-story school buildings designed with Fenestra Type "D" Acoustical-Structural Building Panels.

Standard troffer lighting fixtures may be installed flush with the acoustical ceiling in this new Type "D" Troffer Panel, eliminating hanging fixtures and exposed wiring conduits.

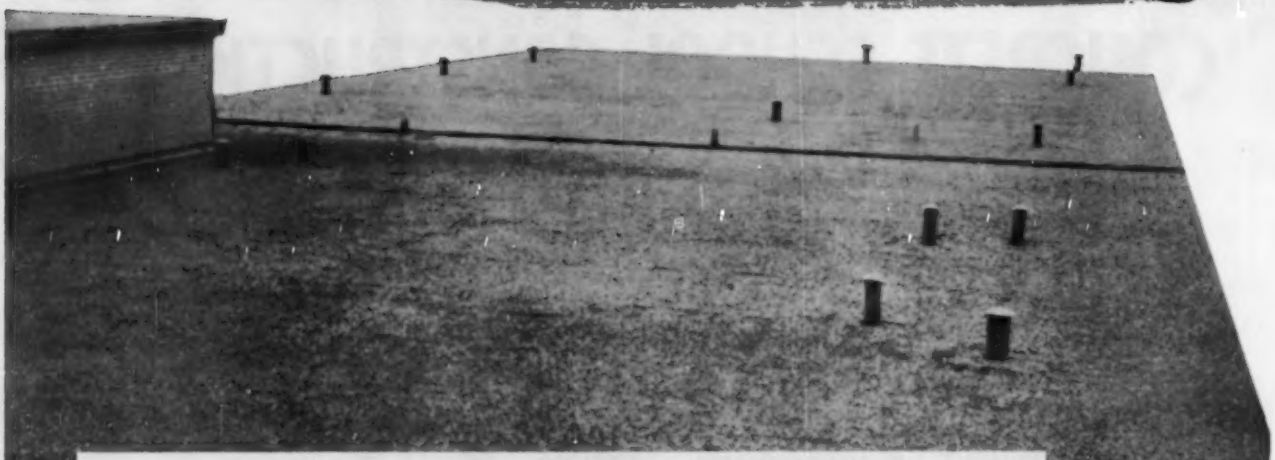
Write Detroit Steel Products Company, Dept. PA-6, 3409 Griffin St., Detroit 11, Michigan, for your copy of the new book, *Fenestra for Schools,* and for complete details on this new Troffer Panel.

Fenestra

TAC

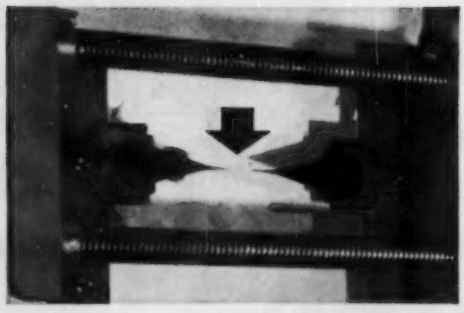
TROFFER-ACOUSTICAL BUILDING PANELS

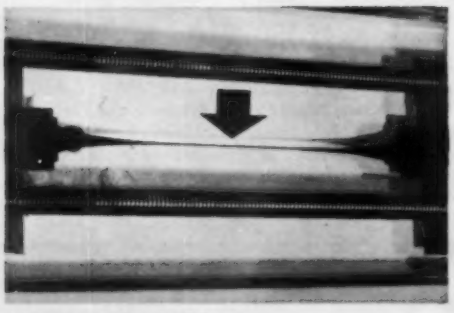
Announcing



Superior weather resistance

This "accelerated" weathering test proved Aquadam to be nearly twice as resistant to excessive exposure as other bitumens. Samples of many types of bitumens were subjected to continued cycles of radiation, waterspray and refrigeration. Aquadam showed no signs of deterioration or other effects long after other samples failed.





High ductility helps prevent roof cracking

This test demonstrates the high ductility of Aquadam that permits it to withstand continual weather stress better than other bitumens. At left, a typical asphalt is shown (arrow) at average breaking point of 12cm. At right, Aquadam is shown (arrow) at a 25cm stretch—100% beyond the average breaking point—and will not break when stretched to 110cm.

SOME OF THE TESTS THAT PROVE THE SUPERIORITY OF J-M AQUADAM BUILT-UP ROOFS!

an important new development in dead level* Roof Protection...

Johns-Manville

Aquadam
(SLAG-SURFACED)

Built-Up Roofs

***for deck inclines from dead level to ½" per foot**

The new Johns-Manville Aquadam Built-Up Roof for dead level or low pitched decks has been specifically designed to give the best possible protection to a building and its contents.

J-M Aquadam Built-Up Roofs owe their proven superiority to Aquadam—the newly developed bituminous asphalt cementing agent employed in the application of the roofing felts.

J-M Aquadam offers these important advantages to provide longer roof life at no extra cost:

- **Greater weather resistance**
- **Greater resistance to cracking**
- **Improved self-healing properties**
- **Greater kettle stability**
- **Greater adhesion—stronger bond**
- **Greater resistance to water**
- **Excellent uniformity**

J-M Aquadam is produced to the most exacting specifications in the built-up roofing field. Its rigidly controlled properties assure high product quality and result in better application of the finished roof. When applied, the excellent adhesive properties of Aquadam permit a firm permanent bond to the felts and to either gravel or slag surfacing. Its excellent flow properties assure easier mopping and thorough coverage.

For complete information about Aquadam Built-Up Roofs, see your Approved Johns-Manville Contractor. He's listed in the classified section of the telephone directory. Or write Johns-Manville, Box 158, New York 16, N. Y. In Canada write 565 Lakeshore Rd. East, Port Credit, Ont.

JOHNS-MANVILLE JM PRODUCTS **Johns-Manville**

CHASE® COPPER...sign of QUALITY in drainage lines!

Remarkable how inexpensive it is to give drainage lines *two-way extra quality*, with Chase copper drainage tube (DWV). *Far longer* service life and greatly *improved* efficiency are assured.

Drainage lines of Chase copper tube *resist* corrosion—*can't* clog with rust—*stay efficient* over the years! Their interior is smoother; flow is unobstructed at joint connections—*larger volumes* of waste water can pass through them because friction is *reduced!*

Chase copper drainage tube is 4 times *lighter* than ordinary drainage pipe. Can be pre-assembled and installed with great savings in time! It can be cut to length right on the job. Requires fewer joints because it comes in 20 foot lengths. And rugged, leakproof solder joints fit within standard partitions, eliminating expensive furring out!

Insist on Chase copper drainage tube (DWV). Add *extra-value* to every home--with *little or no extra cost!*

Longer-lasting radiant heating installations are economical, quick and clean when made from Chase copper water tube. No worry about leaks or repairs—can't clog with rust!

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Boston	Dallas	Indianapolis	Newark	Providence	Waterbury
Charlotte†	Denver	Kansas City, Mo.	New Orleans	Rochester†	(†sales office only)

Vina-Lux .. a finer flooring for superior schools

Jessen, Jessen, Millhouse & Greeven, Architects, Austin, Texas

Better schools need better floors. Vina-Lux is designed to meet that requirement. It is an effective answer to the need for a better performing resilient floor for modern school houses.

Vina-Lux combines the virtues of vinyl resin and asbestos fiber. The result is an exceptionally smooth-surfaced floor with a remarkable resistance to abrasive wear in fresh new light-reflecting colors. Its vinyl resin binder makes it greaseproof and highly resistant to acids and alkalis. It is quiet and safe to walk and work on and its easy-cleanability is a boon to school custodians.

We honestly believe Vina-Lux will out-perform any other type of resilient flooring in school houses on a dollar and cents basis. Over a period of years it costs less per square foot per year.

School folks are mighty enthusiastic about this new, more efficient school flooring. Get all the facts about Vina-Lux for school use — ask us for a copy of the new Vina-Lux brochure — complete with color chart and factual data.

Vina-Lux®

REINFORCED VINYL TILE

AZROCK PRODUCTS DIVISION • UVALDE ROCK ASPHALT CO.
FROST BANK BUILDING • SAN ANTONIO, TEXAS
MAKERS OF VINA-LUX • AZROCK • DURACO • AZPHLEX

Which is
the best way
to air condition a
SHOPPING CENTER?

Acme Supermarket in Shoppingtown, DeWitt, N. Y., features a modern, year-round Carrier air conditioning system. Peripheral ducts carry cooled air from a 30-ton Weathermaker, warm air from two gas-fired duct-type **unit heaters.**

The Addis Company is an exclusive specialty shop in this new shopping center. It has its own 40-ton Carrier system complete with an evaporative condenser for 95% water saving, and gas-fired unit heaters for economical winter heating.

Candlelight Shop, Shoppingtown's gift center, packs a self-contained Carrier Weathermaker* into a side wall. The unit taps into ductwork previously installed for warm air furnace. New air-cooled Weathermakers require no water.

Carrier is the quickest way to the right answer

JUST 1–2 AND THE JOB IS THROUGH!

Carrier has all the ways to control the temperature on any job, summer or winter—and all Carrier equipment is engineered to the same uniform standard. So short-cut hours of selection by (1) using the Carrier line as your shopping guide and then (2) comparing values. Get in touch with your Carrier dealer or distributor—listed in the Classified Telephone Directory. Or write to us directly. Carrier Corporation, Syracuse, New York.

*Reg. U.S. Pat. Off.

Carrier **air conditioning · refrigeration · industrial heating**

HOME FURNISHINGS WORK AREA

PERIODICALS STORAGE AREA

ONEONTA GOES MUTSCHLER

...all the way!

ENTIRE HOME ECONOMICS BUILDING OF STATE TEACHERS COLLEGE AT ONEONTA, NEW YORK, IS MUTSCHLER EQUIPPED.

Mutschler

finest in institutional and domestic cabinetwork since 1893

OTHER MUTSCHLER EQUIPPED DEPARTMENTS INCLUDE

Foods Laboratory
Laundry & Work Room
Nutrition Laboratory
Clothing Laboratory
Education Laboratory
Work & Storage Rooms

—Installation by School Equipment, Inc., Syracuse, New York, under the supervision of Miss Martha S. Pratt, Director of Home Economics.

FOODS DEMONSTRATION KITCHEN

EDUCATION LABORATORY

Like so many schools of the nation, Oneonta State Teachers discovered they could get more for their money with Mutschler.

The comprehensive services of Mutschler sales engineers cover consultation and advice on the latest in homemaking department design and equipment . . . as well as planning the installation. This service costs nothing extra. In fact, you may consult a Mutschler specialist at any time without obligation whatsoever.

If you are planning a remodeling or building program, may we suggest you contact your nearest Mutschler sales representative listed below.

ARCHITECTS: See Sweet's Architectural File, 22d/Mu and 23b/Mut, for complete specifications.

MUTSCHLER BROTHERS COMPANY, Nappanee, Indiana

NORTHEAST
RAY S. SNYDER COMPANY—New York 17, N.Y., Conn., Mass., R.I., N.J. (North)
CARBEAU, INC.—Boston, Mass., Maine, Vermont, New Hampshire
W. S. BALLOU—Massapequa, L.I., New York; New York City, Long Island
SCHOOL EQUIPMENT, INC.—Syracuse 3, N. Y.; New York State
AMERICAN SEATING CO.—Philadelphia 30, Pa.; Pennsylvania, New Jersey (south) Delaware

SOUTHEAST and SOUTH
SOUTHERN DESK COMPANY—Hickory, N. Carolina; Maryland, West Virginia, Virginia, North Carolina, Tennessee, Mississippi
AMERICAN SEATING CO.—Atlanta 3, Georgia; South Carolina, Georgia, Alabama, Florida
ALL STATE SUPPLY CO.—Little Rock, Arkansas; Arkansas

NORTH CENTRAL
HALDEMAN-LANGFORD CO.—St. Paul 4, Minnesota; Minnesota
V. A. STUMP—Middleton, Wisconsin; Wisconsin
P. O. WILKINS—Dearborn, Michigan; Michigan
J. S. LATTA AND SON—Cedar Falls, Iowa; Iowa
I. P. REIGER COMPANY—Bellwood, Illinois; Illinois
BURNS SALES COMPANY—Indianapolis 8, Indiana; Indiana
KYSER SALES COMPANY—Warren, Ohio; Ohio

CENTRAL
HOOVER BROTHERS—Kansas City 6, Missouri; Nebraska, Kansas, Missouri (western)
CENTRAL SCHOOL SUPPLY CO.—Louisville, Kentucky; Kentucky
LEN A. MAUNE CO.—St. Louis, Mo.; Missouri (eastern)

SOUTHWEST
W. C. HIXSON COMPANY—Dallas 2, Texas; Louisiana, Oklahoma, Texas, New Mexico
PBSW SUPPLY COMPANY—Phoenix, Arizona; Arizona

WEST
AMERICAN SCHOOL SUPPLY CO.—Denver 2, Colo.; Colorado, Wyoming (eastern)
HULL EQUIPMENT COMPANY—Salt Lake City 2; Utah, Nevada, Idaho, Wyoming (western), Montana
AMERICAN SEATING CO.—Los Angeles 3, California; California (southern)
AMERICAN SEATING CO.—San Francisco 24, California; California (northern)

NORTHWEST and OTHERS
MUTSCHLER BROTHERS CO.—Nappanee, Indiana; Oregon, Washington, North Dakota, South Dakota, Illinois (southern)
TOM DEWEY & COMPANY—Lanikai, Hawaii; Hawaiian Islands

Aetna brings a New

AETNA STEEL PRODUCTS CORPORATION

Its engineering skill . . . its service facilities . . . its half century of experience . . . its versatility . . . its ability to deliver in huge quantities or to custom produce one unit — combine to bring an entirely new integrated operation of vast scope to the field of design. The world's largest manufacturer of hollow metal products, Aetna produces doors, door frames, trim, elevator and convector enclosures. Working with every leading architect in the country, Aetna has engineered and manufactured products that are in use in hospitals, schools, office buildings, housing developments and military installations.

E. J. BOYLE DIVISION

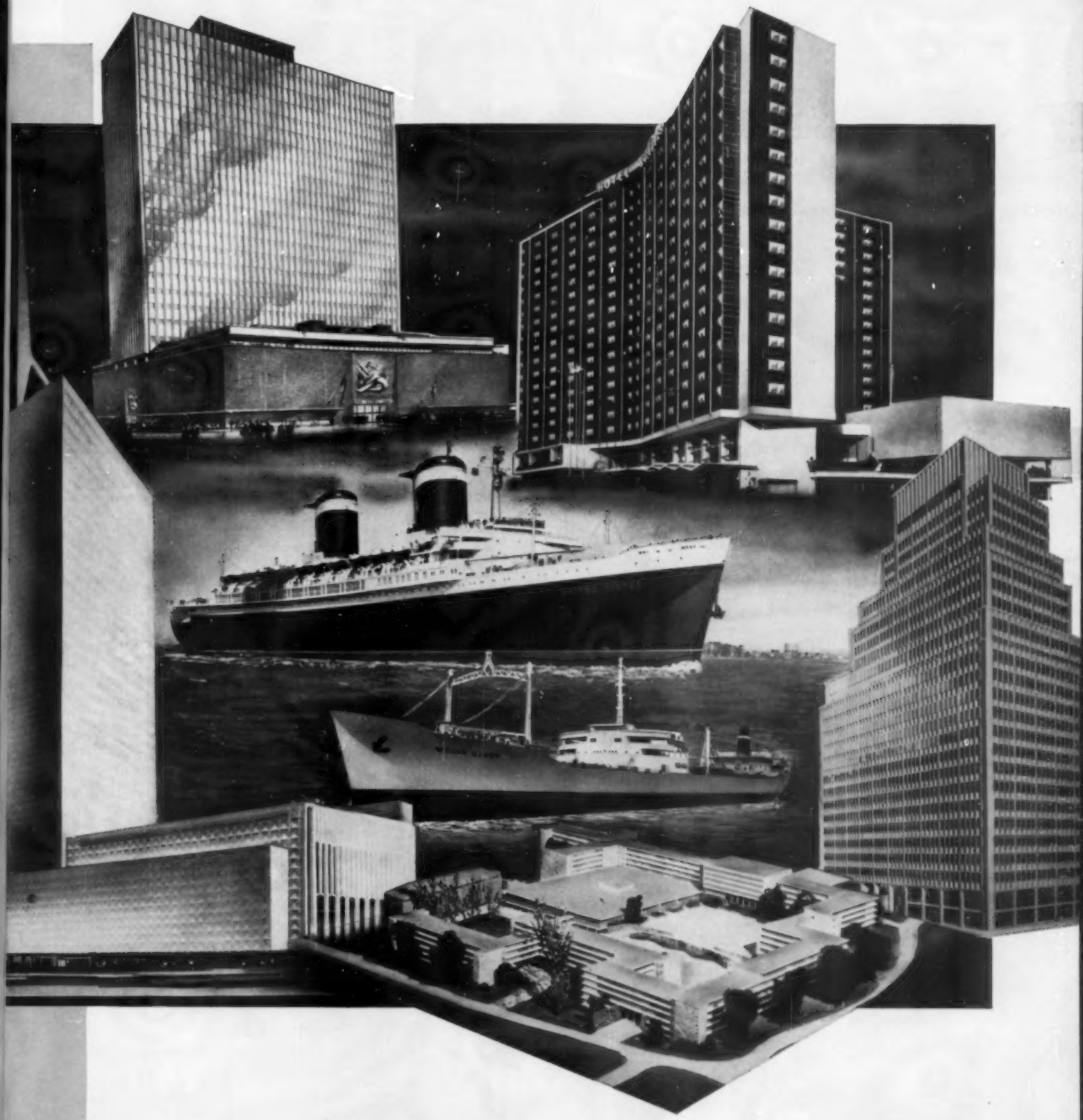
A specialist in the manufacture of movable walls and partitions, bank screens and gates (AETNAWALL), this division is responsible for many of the latest developments in soundproofing, installation procedure and appearance of floor-to-ceiling partitions. AETNAWALL installations found in all types of buildings are specified by America's foremost architects and designers, including Emery Roth and Sons; York and Sawyer, Michael Saphier Associates and Designs for Business, Inc.

ARNOT - JAMESTOWN DIVISION

Manufacturers of PARTITION-ettes*† and OFFICE-ettes‡, in steel or wood, now in use in thousands of offices where space division and efficiency of operation have been planned by leading designers and architects. Its other principal activity is the execution of ship interiors. During 1954 and again in 1955, Arnot-Jamestown will have participated in the completion of: U.S.S. Forrestal, world's largest aircraft carrier; World Glory, world's largest tanker; George M. Humphrey, world's largest ore carrier. This division works closely with designers such as Raymond Loewy, Henry Dreyfuss, Jack Heaney, James Russell Patterson, H. Clifford Burroughes, Karl H. Lengfeld, and naval architects such as Gibbs & Cox, Inc., George Sharp, Inc., J. J. Henry.

*Pat. Pending
†Trade Mark
‡Licensed under DuPont Patent

Dimension to Design...



AETNA STEEL PRODUCTS CORPORATION

EXECUTIVE OFFICES: 730 FIFTH AVENUE, NEW YORK 19, N. Y.

PLANTS: Pottsville, Pennsylvania • Jamestown, New York • Burbank, California (Kahr Bearing Division) • Brooklyn, New York

The JOHN SEALY HOSPITAL

UNIVERSITY OF TEXAS
MEDICAL BRANCH
GALVESTON, TEXAS

Architects
C. H. PAGE & SON,
Austin, Texas

Consulting Architects
EGGERS & HIGGINS
New York, N.Y.

Mechanical Engineers
ZUMWALT & VINTHER
Dallas, Texas

Contractor
FARWELL & COMPANY
Dallas, Texas

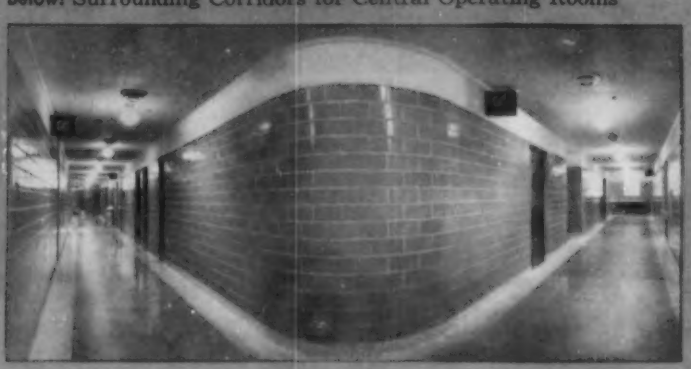
One of the most important features of his 1000 bed hospital valued highly by patients and staff alike is: It is completely air conditioned throughout and Powers controlled.

Left: View of Entrance Lobby with Portraits of the Founder, John Sealy, Sr., and John Sealy, Jr.

Below: Post Operative Recovery Dept. has nine beds.

Below: Research Laboratory

Below: Surrounding Corridors for Central Operating Rooms



Behind the scenes . . .

in this modern hospital **POWERS**

Automatic TEMPERATURE and HUMIDITY Control

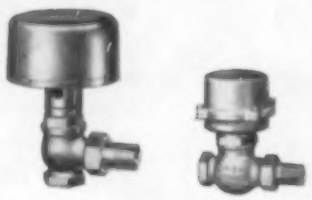
is contributing to the quality of patient care

Radial Type Surgical Department shown in drawing below, is one of the many new concepts incorporated in this center for healing.

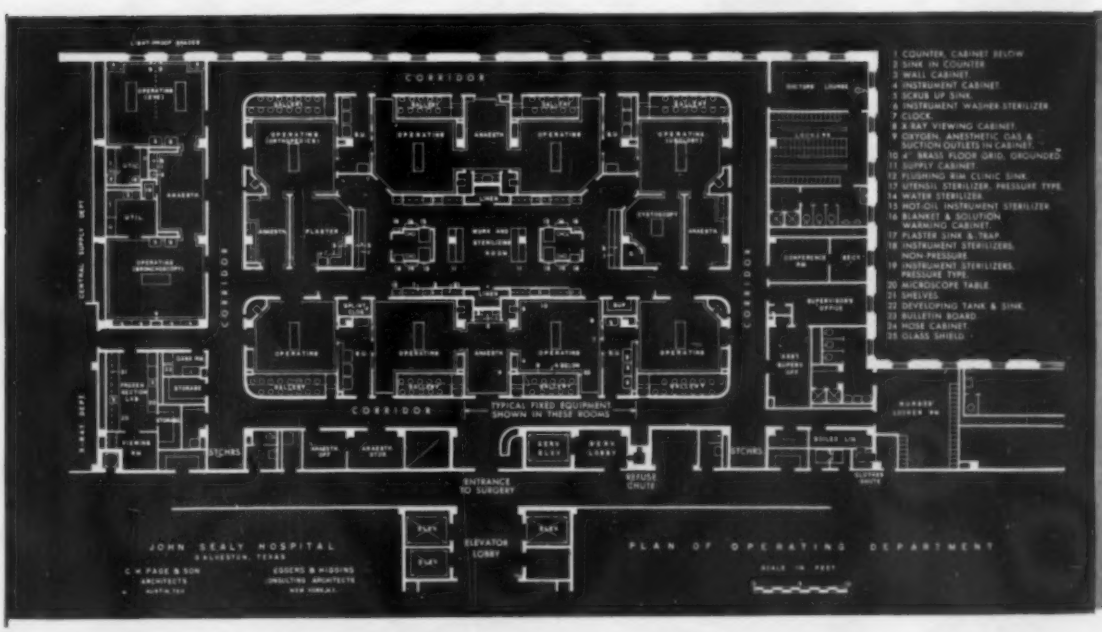
The radial type plan is based on a theory of centralization permitting a compact layout to increase nurses' efficiency by reducing their steps. Powers automatic control of the working climate further increases staff efficiency and contributes to the health and comfort of the patients.

Being completely air conditioned the building requires 1250 tons of refrigeration.

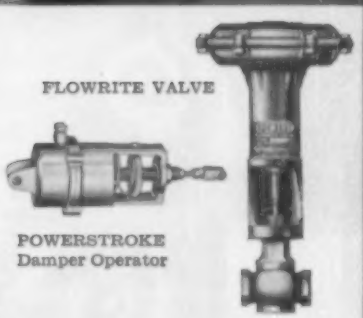
Almost 700 Powers Gradual Acting Thermostats here control 125 Damper operators and 930 PACKLESS Valves on air conditioning units and convectors. Other controls consist of 7 Series 100 Master-Submaster Controller Recorders, Pressure Indicating Controllers and 70 Powers FLOWRITE Diaphragm Valves. (c14)



Powers PACKLESS Control Valves — one of the many superior features of a Powers control system. They eliminate packing maintenance and leakage of water or steam and give smooth accurate control.



Consult Powers when you want thermostatic control for any type of new or existing building. No other firm makes as big a variety of temperature controls for heating and air conditioning systems, shower baths, hydrotherapy, X-Ray film developing, water heaters, fuel oil preheaters and other hospital applications. For further information call your nearest Powers office or write us direct.



FLOWRITE VALVE

POWERSTROKE Damper Operator

THE POWERS REGULATOR COMPANY

SKOKIE, ILLINOIS | *Offices in chief cities in U.S.A., Canada and Mexico*

See your phone book

More than 60 years of Automatic Temperature and Humidity Control

Now

Schools: New Long-Span Q-Deck greatly simplifies the design of covered walkways and cantilevered canopies in modern schools, as well as allowing corridors to be included in the same span with classrooms.

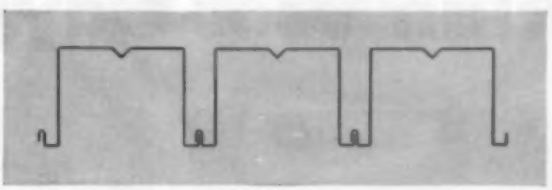
Supermarkets: As in the case of schools, much greater latitude of design is allowed by increasing deck span. Considerable saving in structural steel is made possible, and time and labor are cut down in the erection of the deck.

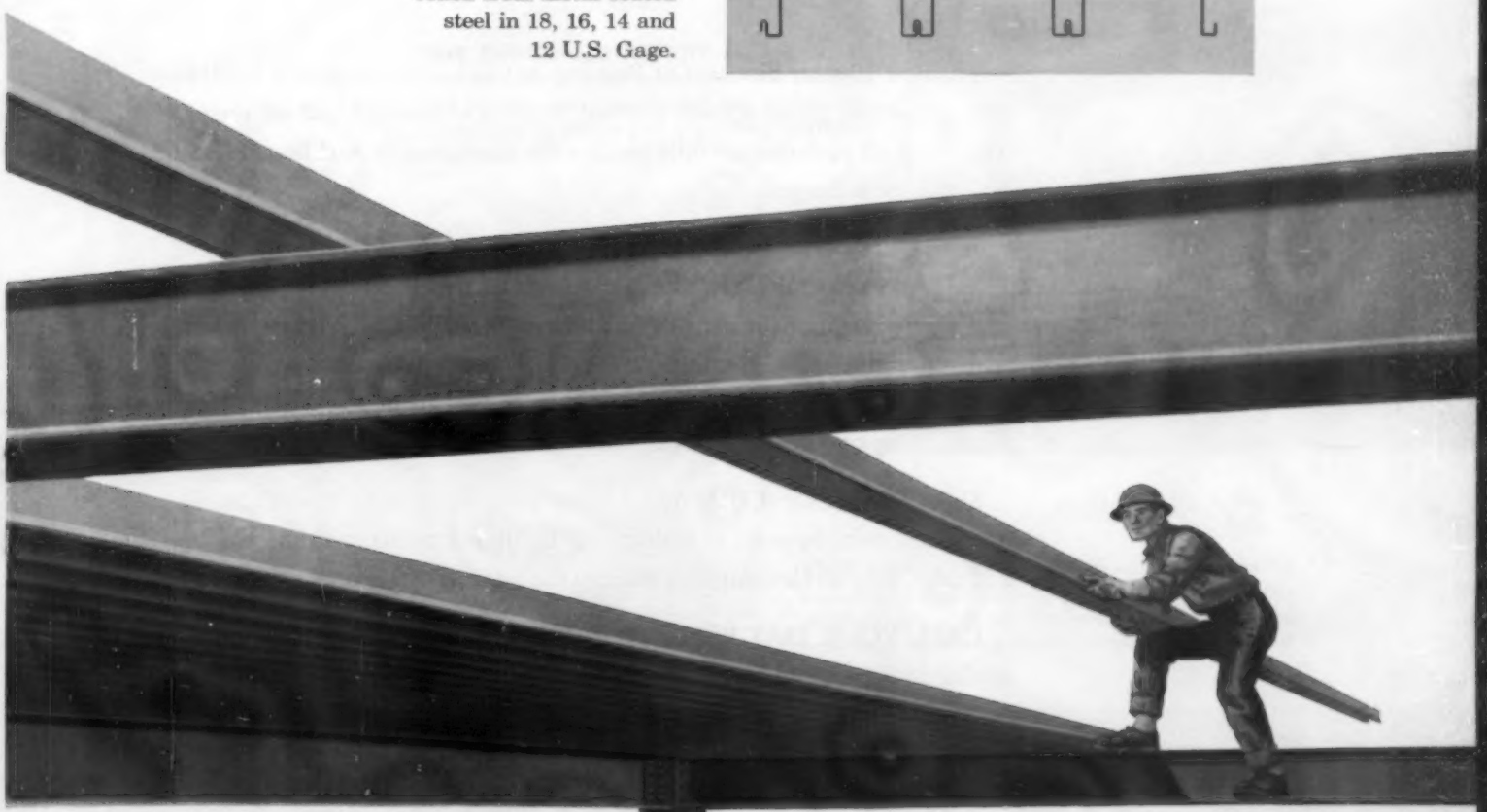
Span 32 Feet

with Robertson Long-Span Q-Deck

After considerable testing and research, H. H. Robertson Company is pleased to announce the availability of a new product much needed in modern lightweight construction—a deck which will span greater distances without loss of load-carrying capacity. New Long-Span Q-Deck, now being manufactured in quantity for the first time, carries with it all the basic quality and advantages of Robertson's famous Standard Q-Deck. Side laps become standing seams and are mechanically fastened at regular intervals for structural stability. Units are easy to handle and erect with a minimum crew. They install quickly and tightly because of precision manufacture. Long-Span Q-Deck is best adapted for use in schools, supermarkets and other building types where longer single spans indicate positive economies. Use the coupon to write for literature concerning this new Robertson product.

Individual units are 12″ wide by 7½″ high rolled from metal-coated steel in 18, 16, 14 and 12 U.S. Gage.





H. H. Robertson Company
2405 Farmers Bank Building · Pittsburgh 22, Pa.
In Canada: Robertson-Irwin Ltd., Hamilton, Ontario
In England: Robertson Thain Ltd., Ellesmere Port, Cheshire
Offices in All Principal Cities World-Wide Building Service

Please send free information on Long-Span Q-Deck.

NAME TITLE

FIRM

ADDRESS CITY

Sinclair uses Day-Brite lighting . . .

The new 10-story Sinclair Oil Building in Chicago is completely lighted with Day-Brite glass-enclosed recessed Troffers — nearly 4,000 of them! Their over-all performance fully justifies the confidence of Architects Holabird & Root & Burgee.

As is amply evidenced by the photographs, Day-Brite Troffers provide lighting at its best. Evident, too, is the fact that Day-Brite Troffers are extremely flexible, both in terms of architectural design and in maintaining required illuminating intensities. They give employes high work-level visibility without eye strain. Can be quickly and economically installed in virtually any type ceiling—are easy and inexpensive to maintain.

SEE! EXAMINE! COMPARE! Many architects, before final decision, are making point-by-point and side-by-side lighting-fixture comparisons. More and more, they are choosing Day-Brite on the basis of their many superiorities.

CALL YOUR DAY-BRITE REPRESENTATIVE! He is thoroughly qualified to consult with you on any lighting problem.

Day-Brite Lighting, Inc., 5405 Bulwer Avenue, St. Louis 7, Missouri.

5437

In Canada: Amalgamated Electric Corp., Ltd., Toronto 6, Ontario.

"DECIDEDLY BETTER"
DAY-BRITE®
Lighting Fixtures

Designed by Holabird & Root & Burgee

Installed by Fishbach, Moore & Morrisey, Inc., for John W. Galbreath & Co., Inc.

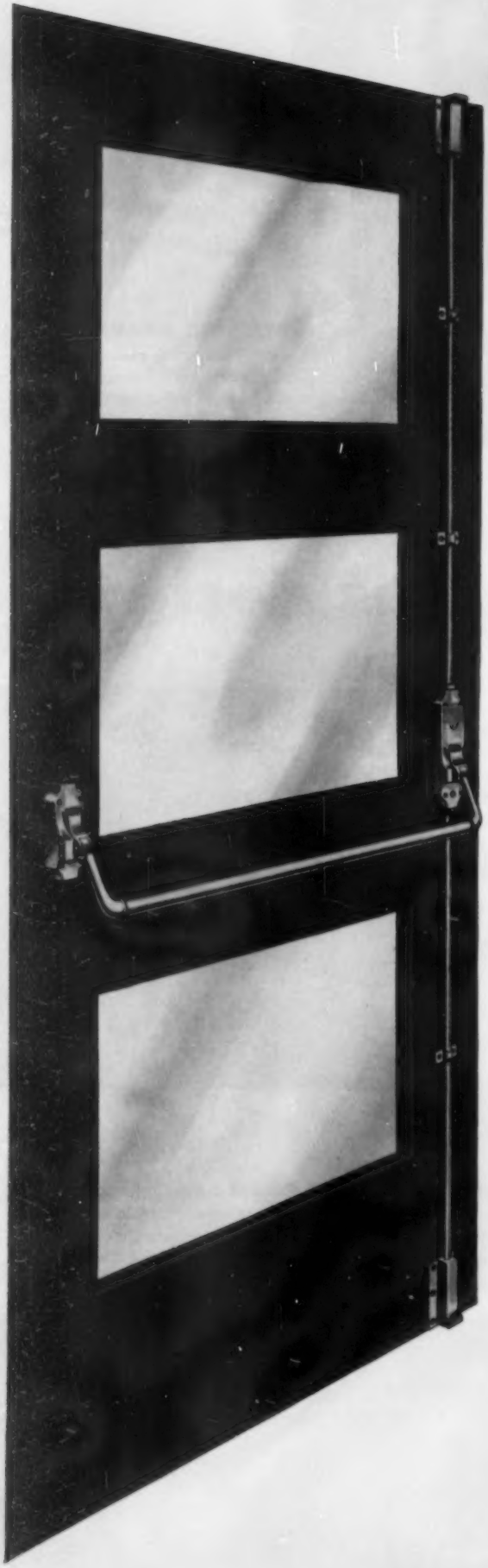
A STRIKING EXAMPLE of the over-all illuminating possibilities with Day-Brite Troffers in large areas is illustrated in this general office expanse in the Sinclair Oil Building. Note the uniformity of desk-top illumination throughout.

gets "see-ability" plus design

THE DIGNIFIED EFFECT and comfortable illumination in Sinclair executive offices are typified by this view. The fixtures are unobtrusive, harmonious in design and completely functional.

ADEQUATE LIGHTING is certainly an essential "tool" in any drafting room. Here again, the versatility of Day-Brite Troffers is apparent—placement of the fixture runs provides a most satisfactory degree of visibility on the boards.

THIS CONFERENCE ROOM again illustrates the flexibility of Day-Brite Troffer placement. Note especially the ample illumination provided throughout the room area by placing fixtures parallel to the narrow dimension.

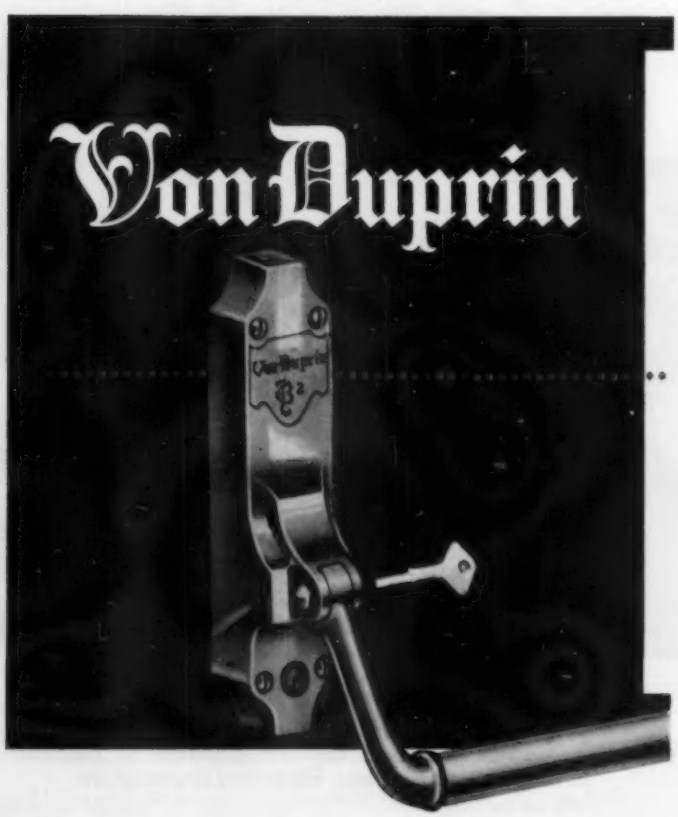


"THE SAFE

Increasing numbers of architects and other safety-minded officials the country over specify Von Duprin exit devices to provide "the safe way out!" And for good reason: Von Duprin's unequalled record of performance! Even under the most adverse conditions, these devices operate efficiently . . . with only normal maintenance.

Since originating fire and panic exit devices in 1908, Von Duprin has consistently paced the field in new designs, incorporating new materials and production methods.

Whether effectively handling the daily flow of traffic . . . or standing ready for that "once-in-a-lifetime" emergency, Von Duprin-equipped doors are your answer to safe, sure exit.



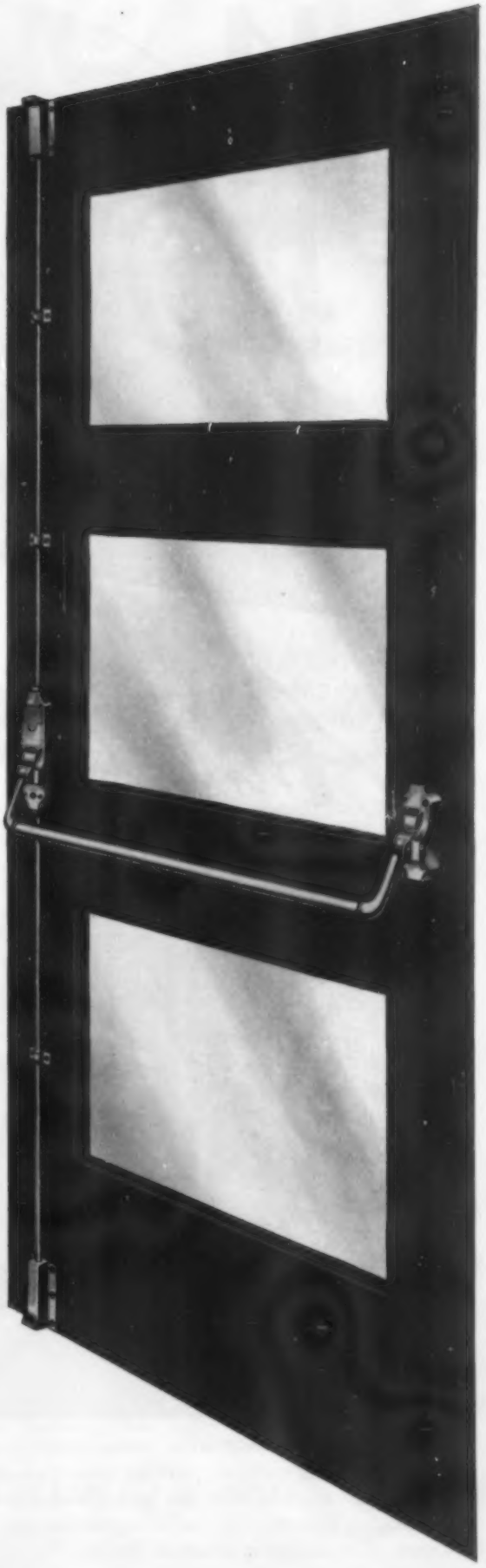
WAY OUT!"

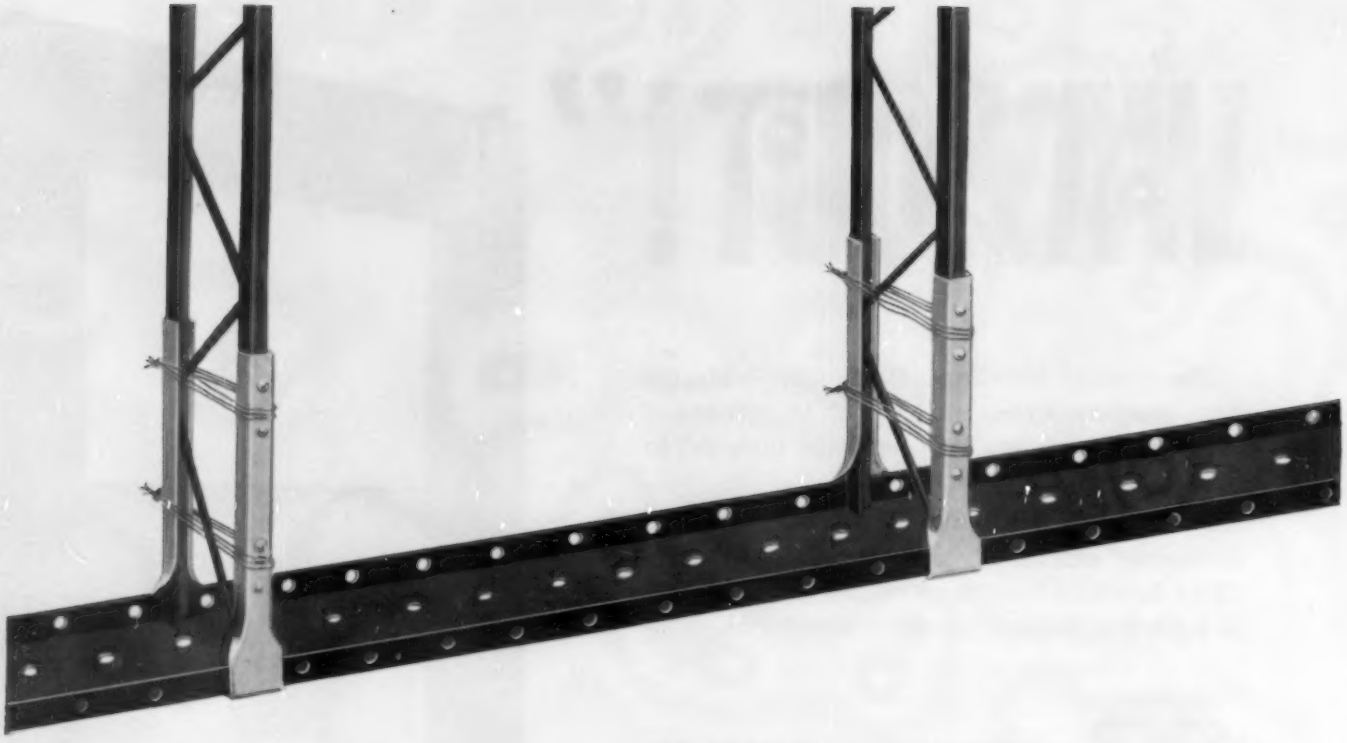
The vertical rod Type B² device, illustrated here, is a part of the complete Von Duprin line of exit devices and auxiliary hardware designed to meet every exit requirement.

For complete information, or for expert advice on specific exit needs, call on your Von Duprin "Exit Specialist"—either a factory representative or a selected builders' hardware distributor.

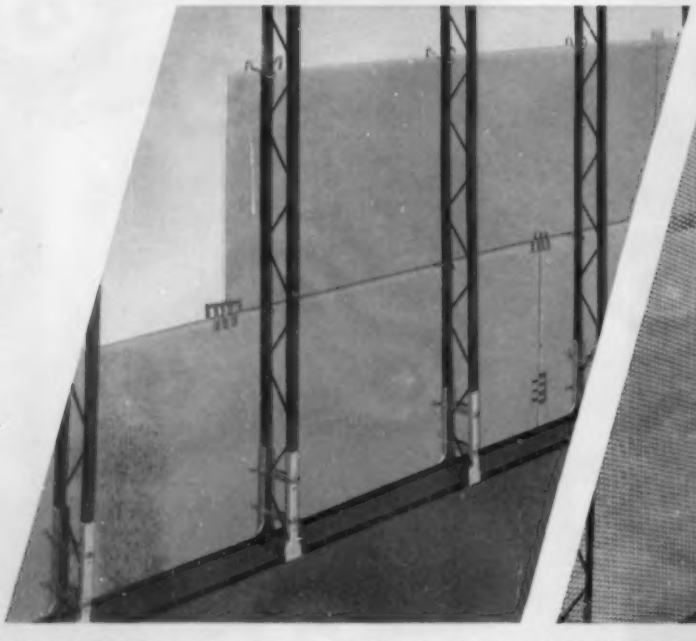
Von Duprin
PANIC DEVICES
ASSURE SAFE EXIT

VONNEGUT HARDWARE CO.
VON DUPRIN DIVISION
Indianapolis 9, Indiana

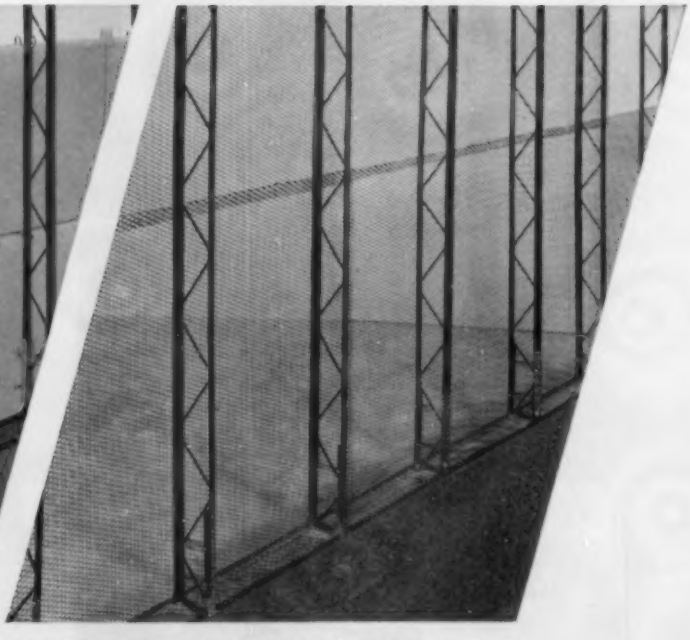




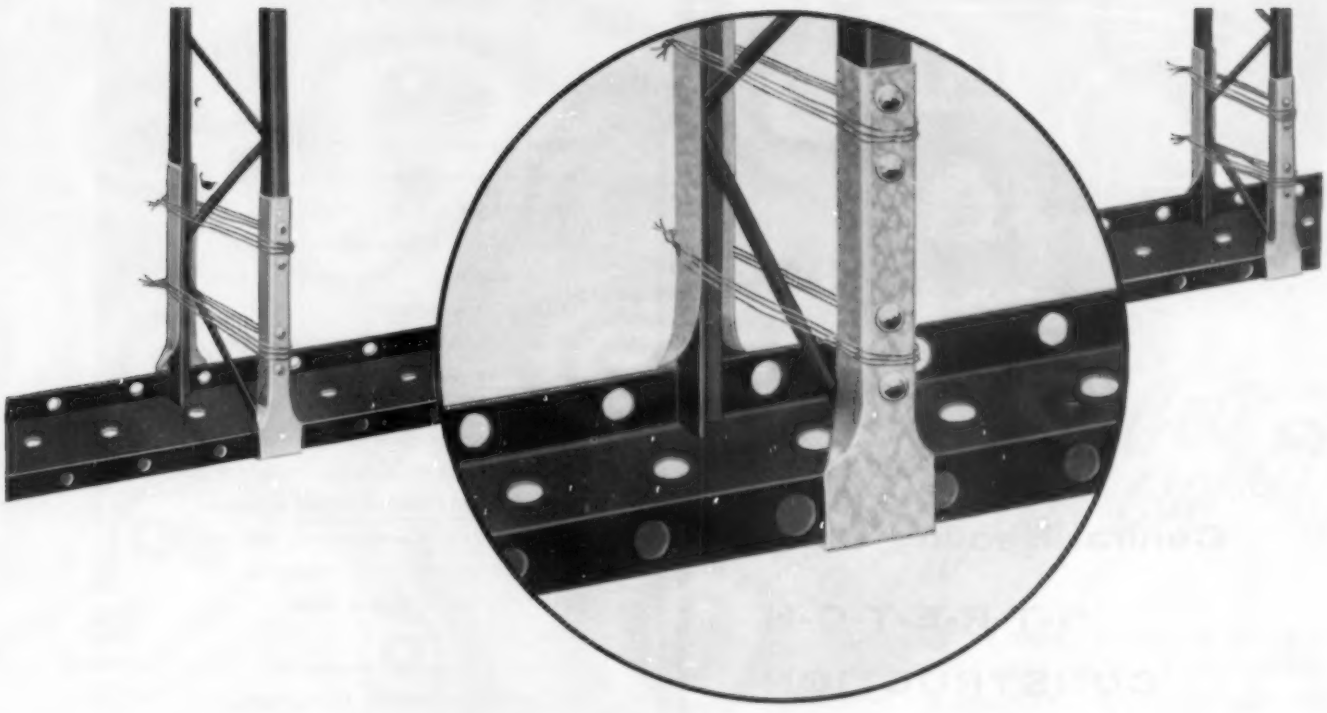
Announcing GOLD BOND



FOR GYPSUM LATH WALLS—The system is simple to erect, requiring minimum parts and labor. Gypsum lath can be attached firmly and quickly with Gold Bond clips. Lowered dead load of this hollow wall system offers savings in structural framing.



FOR METAL LATH WALLS—Holostuds are designed for fast application of metal lath, too. One-man construction is possible—complete system is erected with ordinary lather's tools and all connections are made with wire ties.



"HOLOSTUD" WALL SYSTEM

NEWEST ADDITION TO THE GOLD BOND LINE—Gold Bond's *new* Holostud Wall System for non-load bearing partitions. In addition to excellent fire, sound, and shock resistive benefits, this strong, lightweight Holostud System is designed for fast construction and simplified routing of ducts, plumbing and electrical conduits. Made up of prefabricated Holostuds, steel tracks, and shoes, this low cost system is adaptable to either gypsum or metal lath application.

PREFABRICATED HOLOSTUDS—The open strut-type construction of Holostuds provides exceptional strength and rigidity to partitions besides allowing two-way accessibility for vertical or horizontal routing of utilities. The studs are fabricated with ½" x ½" angles securely braced by struts welded at 8" intervals. Floor and ceiling tracks are one piece channel-shaped units with ½" legs, perforated for easy lath attachment. Holostuds are available in 2½", 3¼" 4" and 6" widths permitting use of the system in four different partition thicknesses.

For complete technical data on this new Gold Bond Holostud Wall System, write:

NATIONAL GYPSUM COMPANY • BUFFALO 2, NEW YORK

Build better with Gold Bond . . . LATH AND PLASTER PRODUCTS

NEW ®Janitrol

Large Capacity Central Heating Units

S-T-R-E-T-C-H CONSTRUCTION MONEY

Ideal for school house, church, super-market installations, . . . or any other large volume heating or heating and air conditioning applications. . . . Designed for use with central system . . . or as free standing unit heaters.

Capacities: 250,000 Btu to 1,750,000 Btu per hour. —7 sizes. Factory assembled and tested.

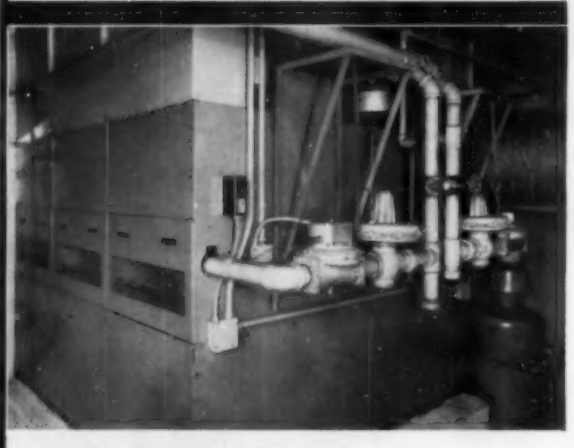
Fuel: Natural, manufactured or LP gas.

Long life and reduced weight achieved through use of well known Janitrol ceramic coated Multi-Thermex heat exchangers and quiet ribbon burners.

See how ease of installation is greatly improved. Investigate our important installation cost savings.

FOR UNIT HEATING

With outlet nozzles attached, this 1,250,000 Btu free-standing combination is used as a factory unit heater. Capable of a wide variety of air and temperature distribution patterns.



FOR CENTRAL SYSTEMS

This 1,500,000 Btu installation is in a church. System is zoned for different activity areas. Unusual quietness and economy have been reported for this system.

for better design . . . see your architect

FIND OUT HOW MUCH YOU CAN SAVE:

Just send your plans to your nearest Janitrol office, or to Columbus, Ohio, for a free cost estimate. Send for specifications.

®Janitrol
GAS-FIRED UNIT HEATERS

Janitrol Heating
& Air Conditioning Division
Surface Combustion Corporation
Columbus 16, Ohio

ALSO MAKERS OF *Surface* INDUSTRIAL FURNACES AND *Kathabar* HUMIDITY CONDITIONING

Kirlin SYSTEM BUILT-IN Lighting

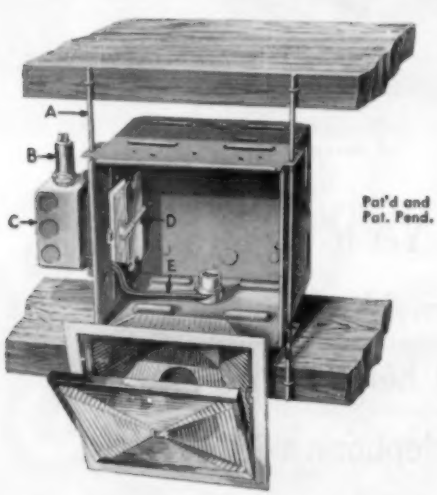
Nothing dangles from Ceiling

WONDERFUL!... How Do They Get So Much Light?

You work for more than just the money you make on the job—there is a lot of satisfaction from that pleasant surprise of the owner when you turn on KIRLIN built-in lighting.

Your customers are getting adequate, diffused light from above. They are satisfied, and so are you, for the Kirlin installation method costs less! . . . The frame is always flush with ceiling even though the box is not level or flush.

NO LIGHT-LEAKS



Pat'd and Pat. Pend.

A Mounting bars **C** Junction box
B Romex or RC wire **D** Heat-insulated
E AF wire pigtails

Why You Profit with Kirlin

INSTALLATION COSTS ARE LESS

REGULAR BUILDING WIRE RUNS DIRECT TO HEAT-INSULATED JUNCTION BOX

NO CARPENTER WORK IS NEEDED

- ★ Made in all sizes—square or rectangular—and in fluorescent
- ★ Individually packed for shipping
- ★ Alzak GlasSurfaced Aluminum reflectors
- ★ Spread-type or concentrating lens
- ★ Hinged Rust-resisting Doors in Die-cast Frames
- ★ UL and IBEW labels

IN STOCK AT LEADING WHOLESALERS EVERYWHERE

LARGEST SELLING RECESSED LINE—MILLIONS IN USE EVERYWHERE

The KIRLIN CO. 3435 E. JEFFERSON AVE. DETROIT 7, MICHIGAN

Armchair convenience comes with enough telephones in the right places.
A telephone in the kitchen is a real time-saver. Saves steps, too.
BUILT-IN CONDUIT
BUILT-IN CONDUIT

Built-in telephone conduit is low in cost. Yet it (1) gives lasting protection to interior beauty, (2) provides the convenience of well-placed outlets, (3) helps assure client satisfaction. Specify conduit for telephone wiring.

Your Bell telephone company will be glad to help you work out economical conduit installations. For details on home telephone wiring, see Sweet's Light Construction File, catalog 8i/Be, or just call your nearest business office. **BELL TELEPHONE SYSTEM**

Photo by Hedrich-Blessing, Furniture by Kroehler

It's Modern! It's Distinctive! It's Hardwood!

There's high style in this Bruce Block Floor to complement the most modern interior. The parquetry design is beautiful everywhere . . . giving full play to the delicate coloring and interesting grain of durable oak. Installation is simple . . . blind-nailed over wood subfloor or laid in mastic over concrete. Famous Bruce factory-applied "Scratch Test" Finish saves time and money. Bruce Blocks are also available for on-the-job finishing. Write for color booklet. See our catalog in Sweet's.

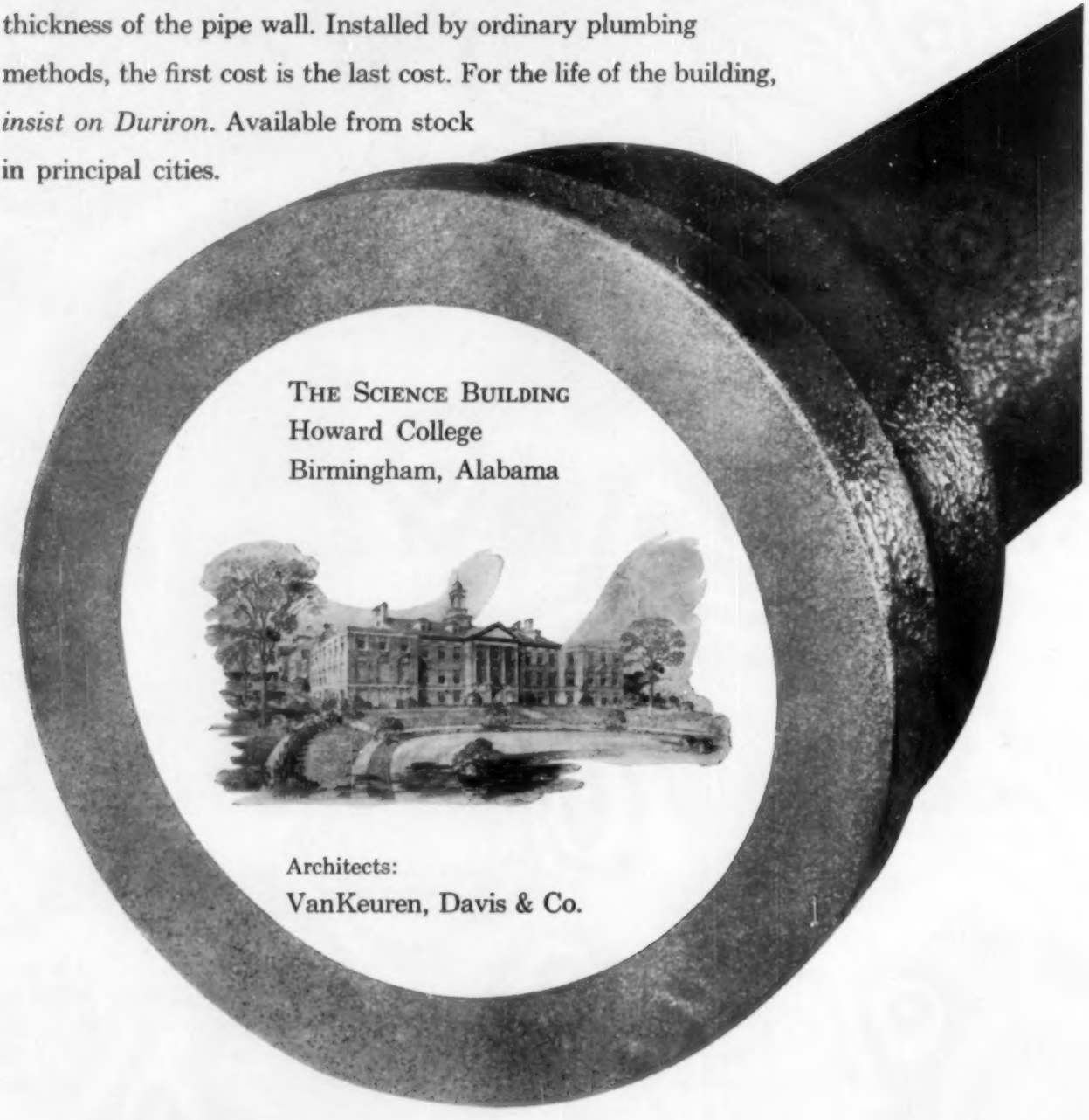
E. L. BRUCE CO., MEMPHIS 1, TENN.

BRUCE BLOCK Hardwood Floors

Naturally Beautiful!

Duriron® vs. Corrosion is **'NO CONTEST'** *at Howard!*

Duriron Acid Proof Drain Pipe will probably outlast the new Science Building at Howard College. At least, this has been the history of Duriron installations. The reason is that Duriron's extremely high resistance to corrosion is present through the entire thickness of the pipe wall. Installed by ordinary plumbing methods, the first cost is the last cost. For the life of the building, *insist on Duriron.* Available from stock in principal cities.



DURIRON
LOOK FOR THE NAME ON EVERY PIECE

The Duriron Company, Inc.
Dayton, Ohio

R/C DUCT FLOORS provide complete electrical flexibility...

NATIONAL EDUCATION ASSOCIATION BUILDING, Washington, D. C.

This modern, 8-story building, now under construction, has a reinforced concrete frame and R/C Duct Floors. It won the Annual Award of the Virginia Chapter, A. I. A.

Joseph H. Saunders, Architect
Reisner & Urbahn
Consulting Architects
Beall & LeMay
Structural Engineers
Joseph F. Nebel Co.
General
Contractors

YET COST 19% LESS than cellular steel floors!

To provide *complete* flexibility of office space, the new NEA Building is being equipped with movable partitions . . . plus R/C Duct Floors. These are standard concrete joist floors with a system of electrical distribution ducts buried in the structural slab. No special "fill" is required. Ducts are placed on centers of about 7′. Electrical outlets for power, telephone, and intercommunication systems can be connected every two feet, if desired, in a matter of minutes.

R/C Duct Floors resulted in an estimated saving of 19%—60c per sq. ft.—over cellular steel floors. R/C Duct Floors also eliminated the need for additional fireproofing and saved 6″ in height per floor!

Write for new 16-page bulletin.

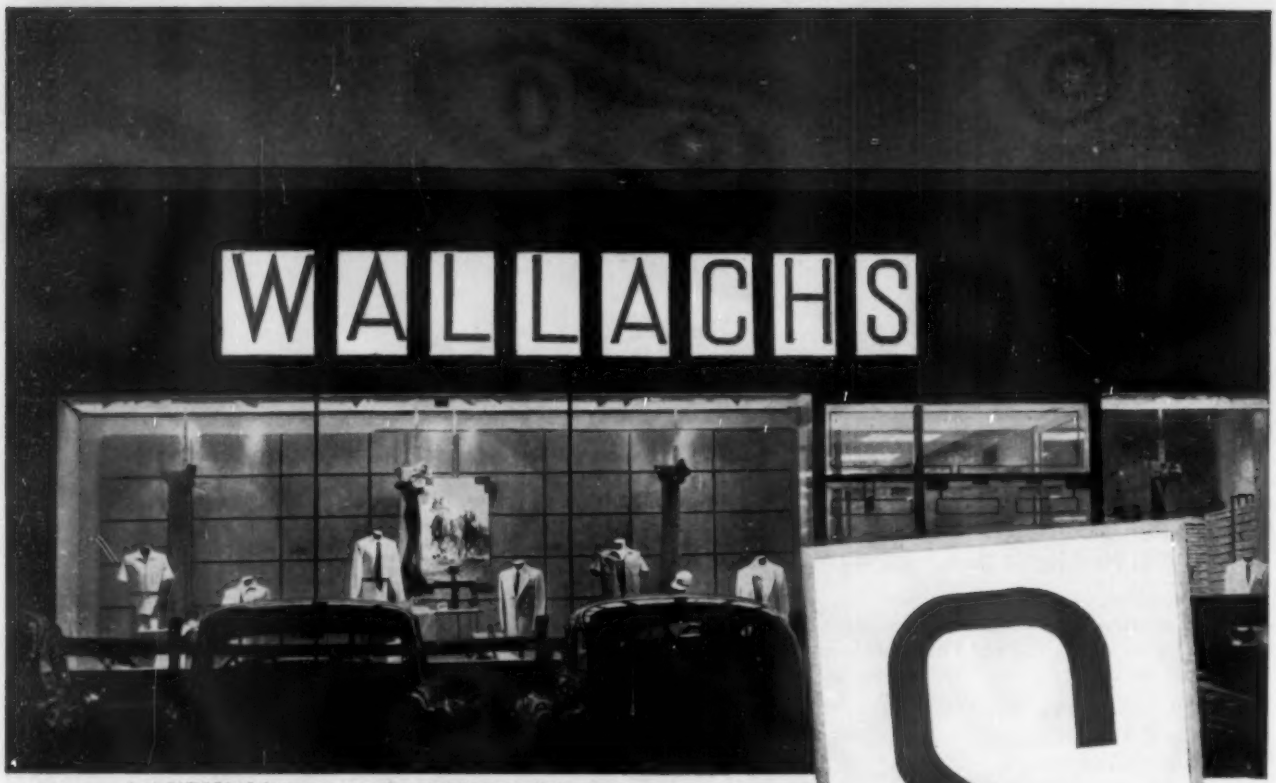
R/C DUCT FLOORS

(ELECTRIFIED CONCRETE JOIST FLOORS)

CONCRETE REINFORCING STEEL INSTITUTE

CRSI

38 South Dearborn Street • Chicago 3, Illinois



Red PLEXIGLAS letters on translucent white panels, backlighted, identify the Wallachs store, Cross County Shopping Center, Yonkers, N. Y. Architects: Ketchum, Gina and Sharpe.

Sign Material for Architects—

PLEXIGLAS

When signs are made of PLEXIGLAS® acrylic plastic, you and your clients can count on:

Pleasing Architectural Appearance. PLEXIGLAS makes possible signs that are in harmony with architectural designs. It can be formed to almost any shape and is available in a wide range of colors.

Night and Day Effectiveness. At night the large luminous areas of backlighted PLEXIGLAS signs command attention. In daytime they are equally effective, with the same appearance and color values as when lighted.

Durability. The weather-resistance of PLEXIGLAS has been established through years of service as the standard outdoor plastic. Maintenance costs of PLEXIGLAS signs are low; light sources are protected from dirt and damage. Use the coupon for full information on how PLEXIGLAS can give buildings—present or planned—proper identification.

ROHM & HAAS COMPANY
Washington Square, Philadelphia 5, Pa.

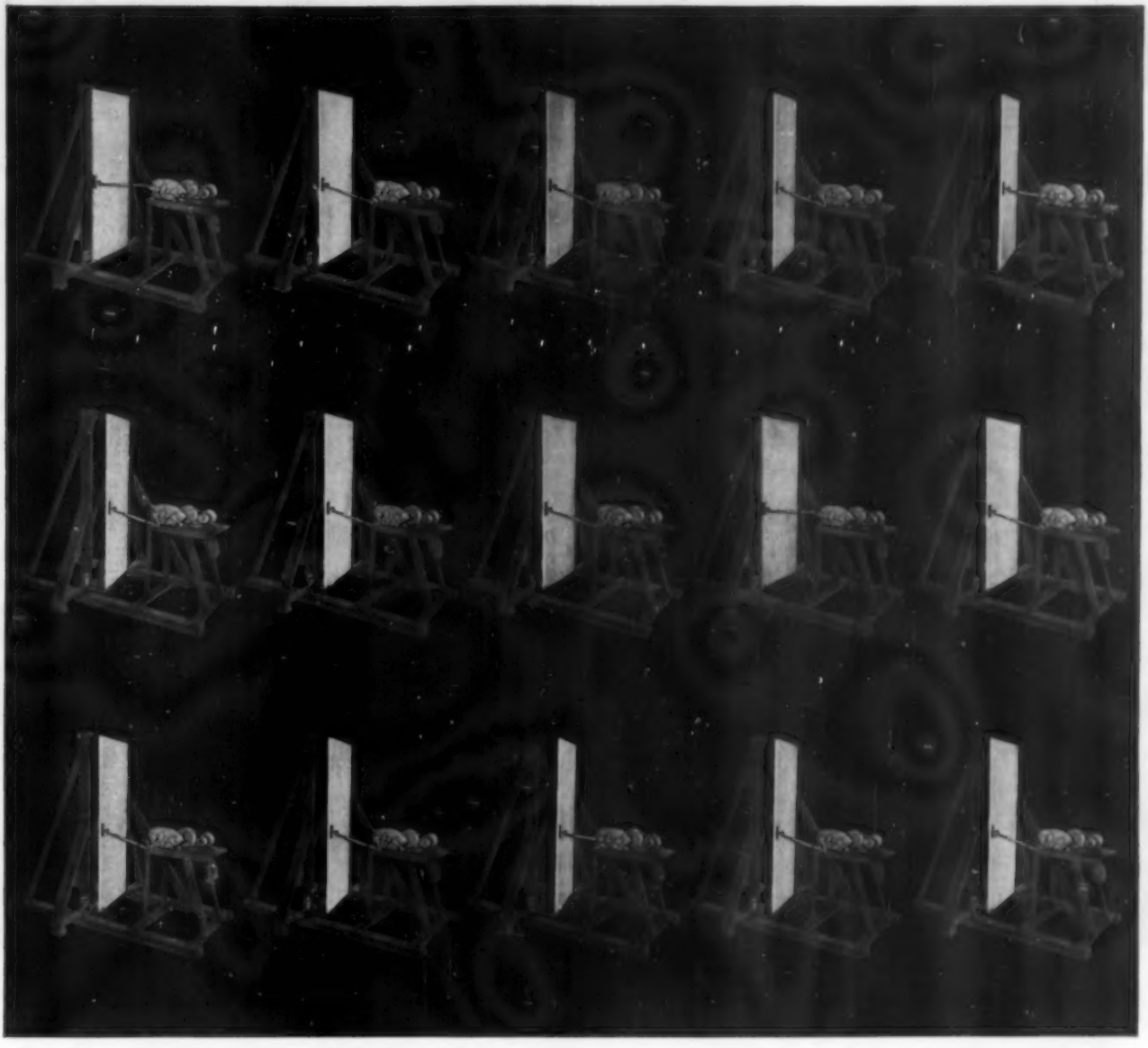
Please send me:
- ☐ Your booklet "PLEXIGLAS—the Outdoor Plastic—for Signs."
- ☐ The names of PLEXIGLAS sign companies in this area.
- ☐ Samples of the colors in which PLEXIGLAS is available.

NAME_____
FIRM_____
ADDRESS_____
CITY_____ ZONE____ STATE_____
PS-198

CHEMICALS FOR INDUSTRY

ROHM & HAAS COMPANY
WASHINGTON SQUARE, PHILADELPHIA 5, PA.
Representatives in principal foreign countries

Canadian distributor: Crystal Glass & Plastics, Ltd., 130 Queen's Quay at Jarvis Street, Toronto, Ontario, Canada.



Slam...Slam...Slam...642,934 Times... But it couldn't faze a New Londoner door!

After slamming a Curtis New Londoner hollow-core flush door 642,934 times with their special slamming machine, the "torturers" got tired—but the door didn't! Banged 72 times per minute with a force of 192 foot-pounds per second—the equivalent of a lifetime of slamming—the New Londoner door failed to show the slightest injury.

What's the reason for this amazing stamina? It's the patented locked-in, all-wood gridlike core that keeps the Curtis New Londoner door hale and hearty through long years of use—eliminates warping and sagging—gives the owner more for his door dollars.

And that, in turn, is the reason why so many architects and builders consider these superior doors the mark of a better built home. And why, too, they are so widely used in schools, hospitals and other public buildings.

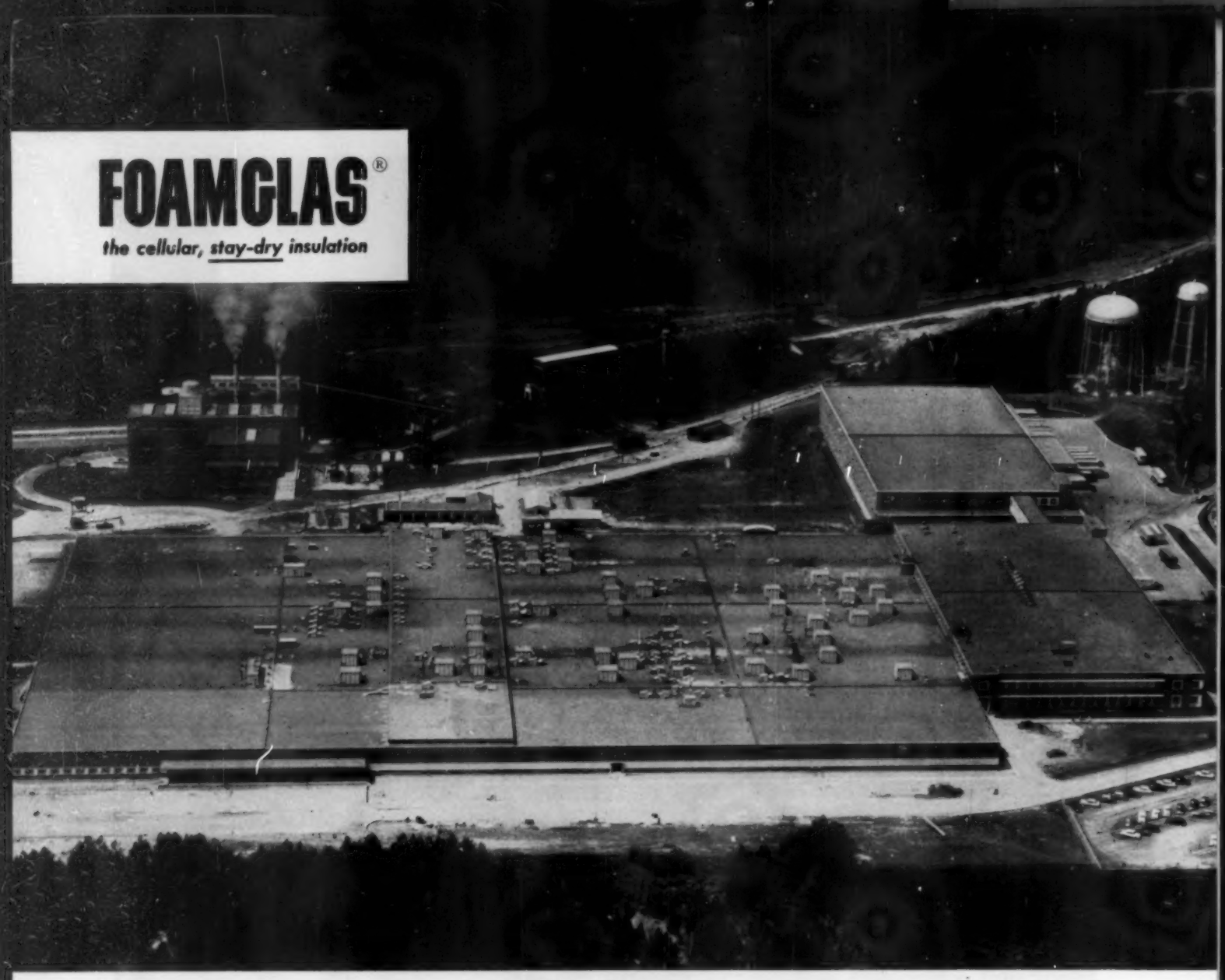
Curtis New Londoner doors and all Curtis Woodwork are sold by retail lumber and building-material dealers everywhere. For complete information, write Curtis Companies Service Bureau, Clinton, Iowa.

CURTIS NEW LONDONER HOLLOW-CORE FLUSH DOORS

CURTIS WOODWORK

Heart of the Home

FOAMGLAS®
the cellular, stay-dry insulation



Airview of Grace Bleachery, the world's largest . . . recently enlarged by The Springs Cotton Mills at Grace, S.C. *Engineers and Architects:* Robert & Co. Associates, Inc., Atlanta, Ga.; *Roofers:* Ingold Company, Inc., Hickory, N.C. and Arvett & Ledbetter Roofing and Heating Co., Charlotte, N.C.

On Springs Cotton Mills' 16-acre bleachery roof FOAMGLAS insulates effectively because it stays dry

On this 16-acre roof of their Grace Bleachery, The Springs Cotton Mills has found that FOAMGLAS insulates effectively because it can't absorb moisture and lose insulating efficiency.

Installed in 1947 on the original bleachery roof, FOAMGLAS has effectively kept down condensation on the roof slab and conserved heat in the winter. Seven years later it was picked again to insulate the roof of a major addition to this bleachery, the largest in the world.

This unique cellular glass insulation has been used extensively by the Springs Mills in other ways . . . on 350° steam lines . . . in cold storage spaces . . . and on 20 additional acres of mill roofs including one in Lancaster, S.C. covering more looms (7,500) than any other roof in the world.

It will pay *you* to get the full story on the use of FOAMGLAS for buildings, cold storage space, piping, or tanks and equipment. Please write today for a sample and literature indicating your specific interest.

Pittsburgh Corning Corporation

Dept. AB-65, One Gateway Center
Pittsburgh 22, Pennsylvania
In Canada: 57 Bloor St. W., Toronto, Ontario

Emery Roth and Sons, New York, designed the first Penn Center building. *Owner and Builder:* Uris Brothers; *General Contractor:* Cauldwell Wingate Co.; *Engineer:* James Ruderman, all of New York. *Steel erector for joists:* G. & H. Steel Service, Philadelphia.

FIRST PENN CENTER BUILDING HAS 17 STORIES OF OPEN-WEB JOISTS

Built on the site of downtown Philadelphia's old Broad Street Station, where the demolished "Chinese Wall" once began, is this 20-story, multimillion-dollar office building, first unit in the city's new Penn Center.

This heart-of-the-city redevelopment program includes the entire 8-acre area between City Hall and 18th Street, from Market Street to Pennsylvania Boulevard. The completed Center will include additional office buildings, similar to the one shown, and a 1000-room hotel, all flanking a 1000 by 80 ft landscaped esplanade. Modern shopping facilities will be located on the ground floors of the buildings, and an underground shopping concourse is planned.

Scheduled for occupancy later this year, this first office building is a glass and limestone structure providing approximately 400,000 sq ft of office space. Continuous windows surround the building with glass bands, giving maximum natural lighting.

For floor and roof construction, from the third to the 20th story, Bethlehem Open-Web Steel Joists were used.

The advantages of using Bethlehem Joists were many. They were delivered to the job site tagged and ready for placing at an approximate rate of one floor a week, with no delays to the construction schedule. They required only field welding to secure them in place, and to provide a rigid, permanent construction. Pipes and conduits could be run right through the open webs, and installation of recessed lighting fixtures was simplified. In addition to these advantages in construction, the use of Bethlehem Open-Web Joists also gives added fire-protection to the entire structure.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

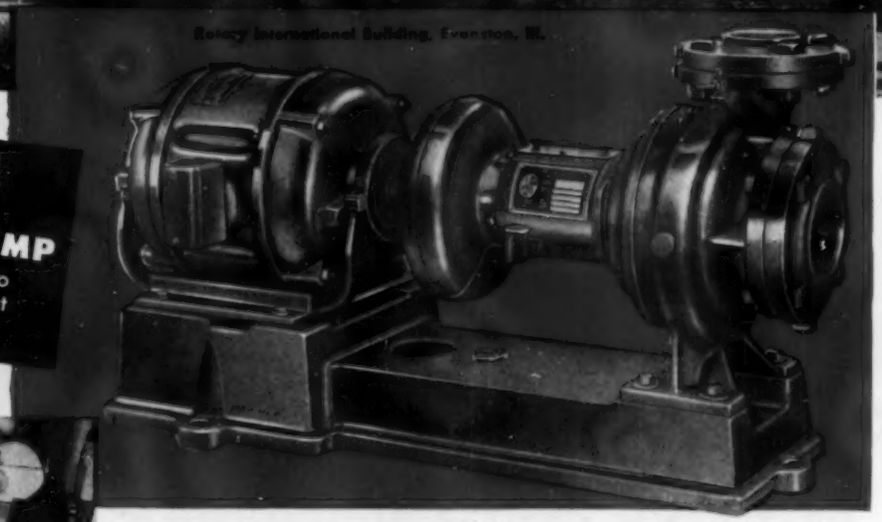
On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

BETHLEHEM OPEN-WEB STEEL JOISTS

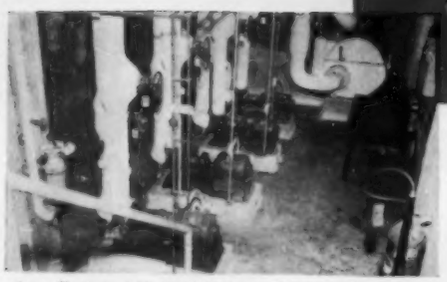
BETHLEHEM STEEL

THEY WANTED *QUIET* OPERATION!

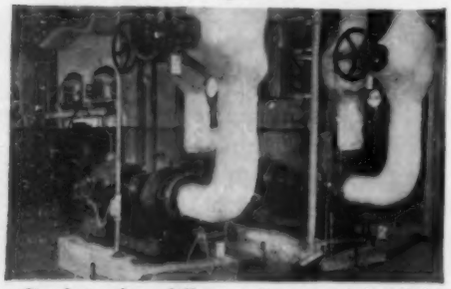
Rotary International Building, Evanston, Ill.



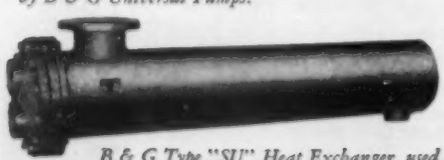
B&G
UNIVERSAL PUMP
designed specifically to operate *QUIETLY* in hot water heating systems



Installation of B & G Universal Pumps for circulating heating and cooling circuits.



Circulation from chiller to cooling tower is handled by B & G Universal Pumps.



B & G Type "SU" Heat Exchanger, used for heating system water with steam.

NEW ROTARY INTERNATIONAL BUILDING SELECTS *B & G UNIVERSAL PUMPS* AND *HEAT EXCHANGERS* FOR HEATING AND COOLING SYSTEM

The advantages of mechanically circulated water for both heating and cooling are well illustrated in this installation.

To assure *quiet* operation, B & G Universal Pumps are used to circulate all water, including that in the chiller and cooling tower circuits. The same piping system is used to circulate hot water in winter and chilled water in summer. Convectors with adjustable-speed fans act as room distributing units.

For ventilation, fresh filtered air from a main ventilating fan is introduced to the convectors through small flexible tubes. This air passes over the convector coils and is either heated or cooled.

Water for the heating system is heated with steam in a B & G Type "SU" Heat Exchanger. Steam is also used to heat the service water by means of a storage tank with a steam coil installed.

Architects: Meher & McGrew, Evanston, Ill. Construction Engineers: Neller, Rich & Bladen, Chicago. Heating & Air Conditioning: C. W. Johnson, Inc., Chicago. Plumbing: O'Callaghan Bros., Chicago.

BELL & GOSSETT
COMPANY
Dept. DX-37, Morton Grove, Illinois

Canadian Licensee: S. A. Armstrong, Ltd., 1460 O'Connor Drive, Toronto

for the critical lighting professional

LOUVRON

by LIGHTOLIER

Crisp, clean design. Broad yet shallow light source. Direct and indirect light. Side panels of pure white enameled steel, ribbed luminous polystyrene or Perfalux (translucency of plastic with the strength of steel). Two varieties of louver shielding. Spring-lock and safety chain louver hinging. Interlocked, rattle-free louver construction. E.T.L. approved ballasts. 4′ or 8′ lengths, 2 lamp or 4 lamp widths. Three stage, pure white semi-gloss finish. Lightolier quality construction.

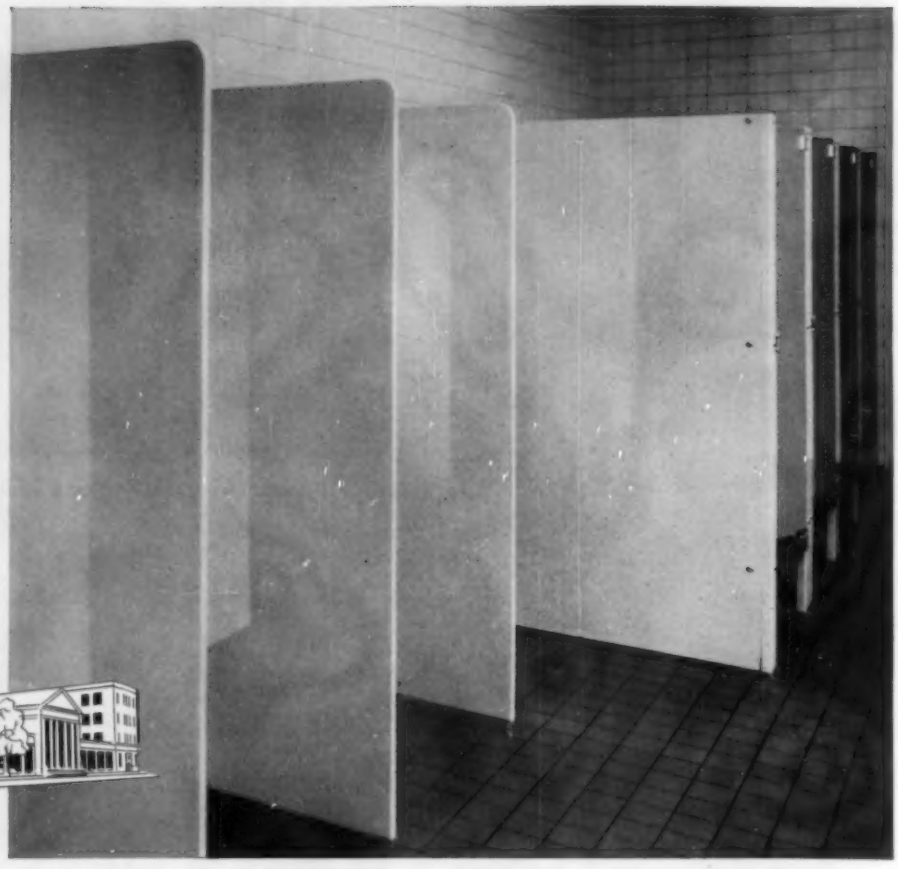
These are just a few of the many features you will find in the new Louvron by Lightolier, features that make Louvron the proper specification where permanently superior performance is required. Write on your professional letterhead today to Dept. PA-65 for the full facts on Louvron and for Lightolier's complete Architectural Lighting Portfolio.

LIGHTOLIER

JERSEY CITY 5, N. J

New England Mutual Life Insurance Company

This impressive home office of a large insurance company is located in Boston, Mass., and was designed by Architects Cram & Ferguson, also of Boston.



Washrooms of another notable building finished in Carrara Glass

The durability of Carrara® Structural Glass and its ability to retain its lustrous, gleaming beauty are well demonstrated here. This washroom, with the Carrara Glass partitions, was originally completed in 1942; and in 1952 additional Carrara partitions were installed. So enduring is the beauty of Carrara Glass that the original partitions look just as nice today as the newer ones.

The answer to the long-wearing qualities of Carrara lies in its basic material and its manufacture. Carrara is all pure glass, with a mechanically ground and polished surface that is highly impervious to attack by steam, water, acids and cleaning compounds. Carrara will retain its beauty indefinitely, without checking, staining, fading or crazing.

The large sections in which Carrara Glass is made have true, even edges that make neat, true joints to discourage the collection of dust and dirt. An occasional wiping with a damp cloth is all that's usually required to keep Carrara clean and sparkling.

For more information on Carrara Structural Glass, write Pittsburgh Plate Glass Company, Dept. 5281, 632 Fort Duquesne Blvd., Pittsburgh 22, Pa.

Carrara ... the quality structural glass

PAINTS · GLASS · CHEMICALS · BRUSHES · PLASTICS · FIBER GLASS

PITTSBURGH PLATE GLASS COMPANY

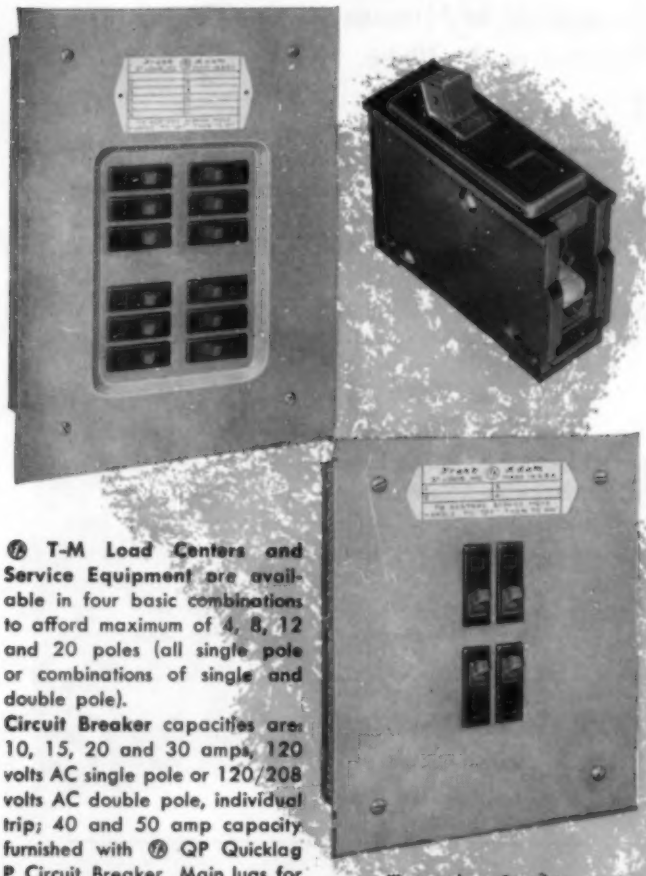
IN CANADA: CANADIAN PITTSBURGH INDUSTRIES LIMITED

for homes . . . offices . . . stores . . .

T-M thermal-magnetic trip circuit breaker

LOAD CENTERS and SERVICE EQUIPMENT

(Panel Base Assembly Type)



Illustrated are Complete "On-the-Job" Assemblies

Ⓕ **T-M Load Centers and Service Equipment** are available in four basic combinations to afford maximum of 4, 8, 12 and 20 poles (all single pole or combinations of single and double pole).

Circuit Breaker capacities are: 10, 15, 20 and 30 amps, 120 volts AC single pole or 120/208 volts AC double pole, individual trip; 40 and 50 amp capacity furnished with Ⓕ QP Quicklag P Circuit Breaker. Main lugs for 100 amp, maximum 115/230 volts 3-wire single phase or 120/208 volts 4-wire three-phase mains.

Include these new assemblies in all plans for new or modernized residential or commerical construction — wherever safe, dependable automatic circuit protection is desired.

Approved by the Underwriters' Laboratories, Inc., for label service, these assemblies provide automatic circuit protection against service interruptions caused by short circuit, harmless or dangerous overloads.

The new units are of the "panel base assembly" type, which means that all components are available in one complete package from Ⓕ distributors' stocks for quick and easy assembly on the job. Circuit Breakers individually packaged also.

Features of the new assemblies are: Ⓕ T-M thermal-magnetic trip circuit breaker with quick-make and quick-break operation on manual or automatic trip and Ⓕ design magnetic blow-out; screwless assembly (just slip the breakers in); one pressure type connection between circuit breaker and bus bar, and "sequence bussing" to balance the load and permit double pole, individual trip combinations.

Use these new assemblies on all lighting and branch circuits. For additional information, consult your nearest Ⓕ representative listed in Sweet's.

Frank Adam Electric Co.

Phone JEfferson 3-6550
BOX 357, MAIN P. O. • ST. LOUIS 3, MO.

Makers of: busduct • panelboards • switchboards • service equipment • safety switches • load centers • Quikheter

Those who really know say:

CERTIFIED CBM CERTIFIED by ETL BALLASTS

give best results!

• No one knows better the value of CERTIFIED CBM BALLASTS than the manufacturers of fluorescent tubes. For the satisfactory performance of their lamps is vitally dependent on the ballasts that operate them. They know CERTIFIED CBM BALLASTS are Tailored to the Tube.

CHAMPION *says:*

"Fluorescent lamps are designed to operate at specific electrical values. The use of auxiliary equipment that has been proven to meet these agreed upon standards will assure the user maximum value for his lighting dollar with a minimum of operational failures. Certified Ballasts are inexpensive insurance."

GENERAL ELECTRIC *says:*

"The life and light output ratings of fluorescent lamps are based on their use with ballasts providing proper operating characteristics. Ballasts that do not provide proper electrical values may substantially reduce either lamp life or light output, or both. Ballasts certified as built to the specifications adopted by the Certified Ballast Manufacturers (CBM) do provide values that meet or exceed minimum requirements. This certification assures the lamp user, without individual testing, that lamps will operate at values close to their ratings."

SYLVANIA *says:*

"The light and life ratings of fluorescent lamps are based on three hour burning cycles under specified conditions and with ballasts meeting American Standards Association specifications. Ballasts marked with the CBM emblem and certified by Electrical Testing Laboratories, Inc., meet ASA specifications."

WESTINGHOUSE *says:*

"Use ballasts that are tested and Certified by Electrical Testing Laboratories or ones that are otherwise known to meet the specifications of the lamp manufacturer. These will give best results with Westinghouse fluorescent lamps."

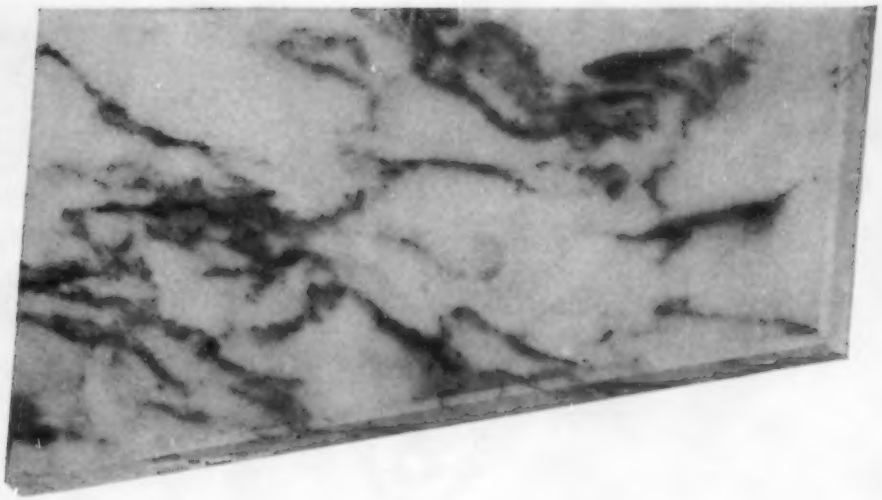
That's why CERTIFIED CBM BALLASTS merit the slogan—Tailored to the Tube.

Certified CBM Ballasts are built to assure quiet operation and long trouble-free life.

CERTIFIED BALLAST MANUFACTURERS

Makers of Certified Ballasts for Fluorescent Lighting

2116 KEITH BLDG., CLEVELAND 15, OHIO



GENUINE MARKWA

marble WALL TILE

The only quarried marble that is lightweight because it is thin

At last, for the first time, magnificent marble, with all its lustrous beauty and vibrant color, is now available in lightweight, half-inch *thinness* for wall or floor covering.

Here are the facts:

MARKWA marble wall tile is a true quarried marble, produced exclusively by America's foremost marble producer and fabricator, the Vermont Marble Company.

MARKWA marble wall tile is half the thickness and half the weight of conventional marble slabs – 1/2 inch thick, 7-1/2 lbs. per square foot. It is cut to three sizes: 8″ x 8″, 8″ x 12″, and 12″ x 12″. It is absolutely flat, uniform in size and thickness to a close tolerance.

Modular sizes (3/32″ less each dimension) are also available at no extra cost. It is set by tile layers in exactly the same manner as clay tile, either with mortar or by adhesion.

MARKWA marble wall tile costs as little as $2.85 per square foot set in the wall depending on variety of marble and type of installation. It is stocked in a wide variety and color range.

MARKWA marble wall tile is ideal for wall or floor, in bathroom, kitchen, living room or foyer, for countertops or fireplace facings, in residential or commercial buildings, for interior or exterior. It comes polished with cushion edges; matte finish available for floors.

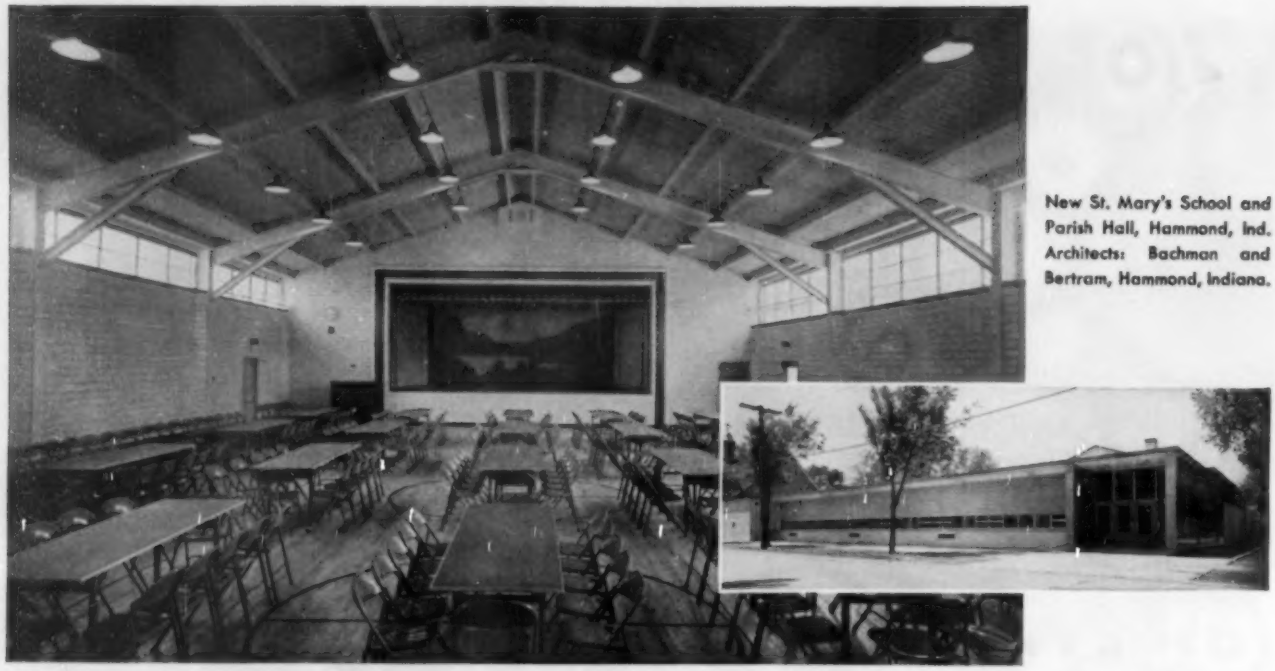
SEE MARKWA NOW! *Specify it for your next job.*

More information and complete specification data are available by writing the Vermont Marble Company, Proctor, Vermont, or any of its branch offices.

MARBLE MARKWA WALL TILE

Produced exclusively by the Vermont Marble Company, Proctor, Vermont.

BRANCH OFFICES: BOSTON CHICAGO CLEVELAND DALLAS HOUSTON PHILADELPHIA LOS ANGELES NEW YORK SAN FRANCISCO IN CANADA: ONTARIO MARBLE COMPANY, LIMITED, PETERBORO AND TORONTO, ONTARIO CONTINENTAL MARBLE COMPANY, LIMITED, VANCOUVER, B. C.



New St. Mary's School and Parish Hall, Hammond, Ind. Architects: Bachman and Bertram, Hammond, Indiana.

Does *your* school or parish need "multi-purpose" dollars?

FLOOR WITH "foot-friendly" NORTHERN HARD MAPLE

for **BASKETBALL**

the finest floor that grows

When your multi-purpose areas are floored with Northern Hard Maple, your building dollars *do double duty*. You have a floor that is superior to all others, on every count, for every sports, social and schoolroom function. It is bright, cheerful, resilient. Its endurance is prodigious. It adds to the building's structural strength (which no mere floor *covering* can do). Architect William J. Bachman observes, of this floor: *"We find it gives proper resilience for all types of play—the only satisfactory floor for basketball and similar sports. Given reasonable care and proper finish it will outlast all composition flooring."*

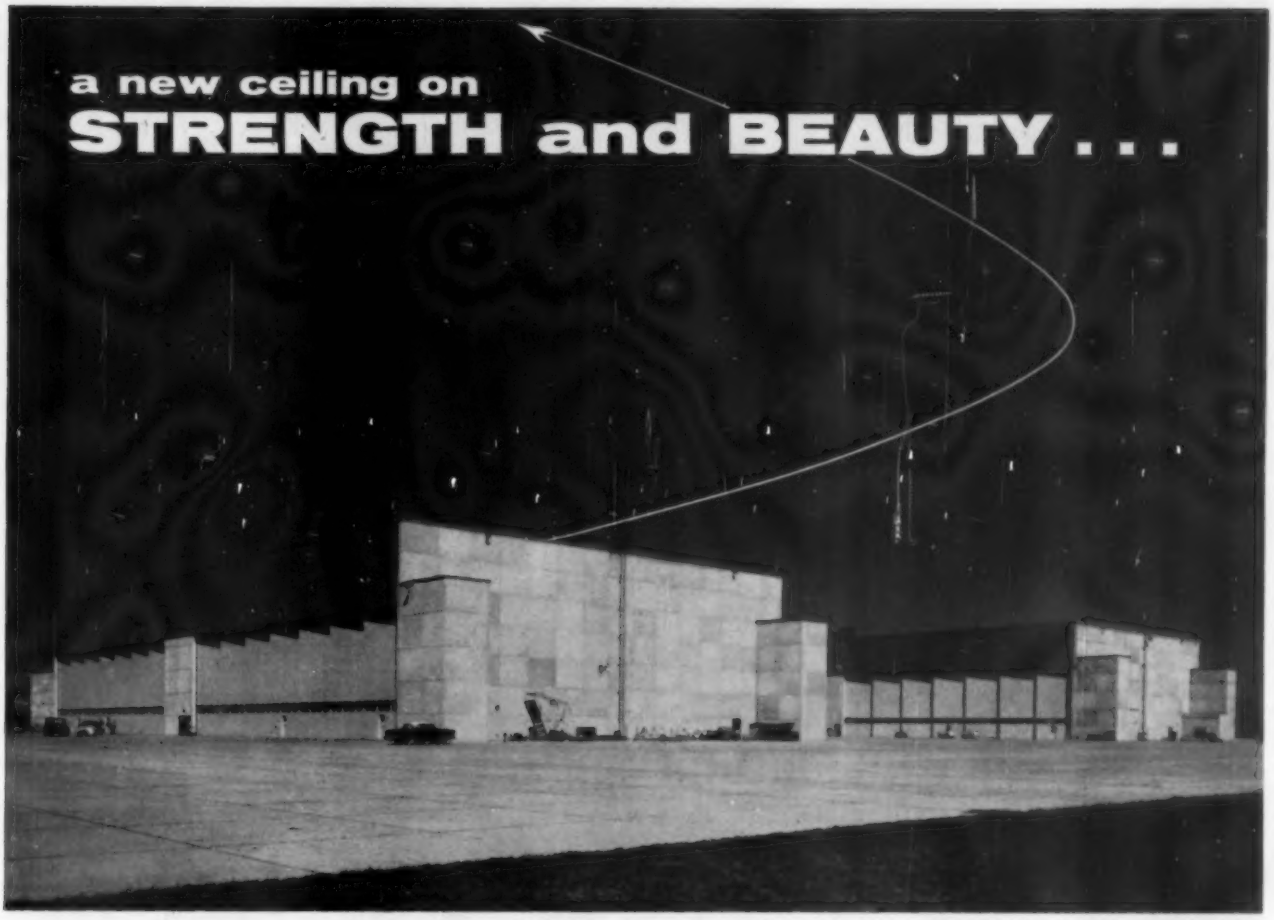
JUST OUT—latest list of MFMA-approved floor finishes; write for your copy. All listed Maple Flooring finishes tested by Timber Engineering Company, Washington, D. C., official testing laboratories for MFMA-approved floor finishes. See SWEET'S—12J-Ma—for full facts on MFMA-millmarked, inspected flooring, or write—

MAPLE FLOORING MANUFACTURERS ASSOCIATION
Suite 583 Pure Oil Building, 35 E. Wacker Drive, Chicago 1, Illinois

for **DANCING**

for **CLASS ACTIVITY**

for **GATHERINGS**

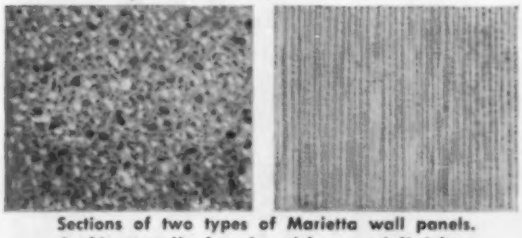


Marietta precast concrete wall panels were used in this Peconic River plant of the Grumman Aircraft Engineering Corp., Calverton, L. I., producers of the famous Supersonic Tiger, Transonic Cougar, S2F Sub-Killer and the Albatross Amphibian.

Marietta **PRECAST CONCRETE WALL PANELS**

HURRICANE TESTED!

Here's proof of how Marietta concrete wall panels withstood the severe blasts of a real life laboratory test as reported by a leading engineering magazine. During Hurricane Carol . . . "Marietta precast concrete wall panels suffered no damage and evidenced no leakage even though two anemometers registered winds as high as 133 M.P.H."



Sections of two types of Marietta wall panels. Architecturally-faced and broomed finishes.

From the ground up . . . time-saving, labor-saving Marietta precast panels for curtain wall construction reaches new heights in beauty, design and durability. On any commercial or industrial project, Marietta concrete wall panels offer unlimited design and construction possibilities. Easy to handle and erect . . . lets you close in faster. Choose Marietta concrete wall panels with broomed finishes or with new architectural facings in a wide range of colors and textures. The modern beauty and hurricane-tested durability of these handsome Grumman buildings are further reasons why architects and builders specify concrete wall panels by Marietta.

Write today for complete information on Marietta solid or insulated precast panels.

THE Marietta
CONCRETE CORPORATION Marietta, Ohio

BRANCH OFFICES: 501 Fifth Ave., New York 17, N. Y., Race Rd. at Pulaski Hwy., Baltimore 21, Md. Box 5192, Charlotte 6, N. C. 411 Foster St., Nashville, Tenn. Box 592, Jamestown, N. Y.; Hollywood, Fla. REPRESENTATIVES in Principal Cities

MARIETTA . . . first choice for the finest in precast concrete wall panels

Before and after Kawneer Modernization

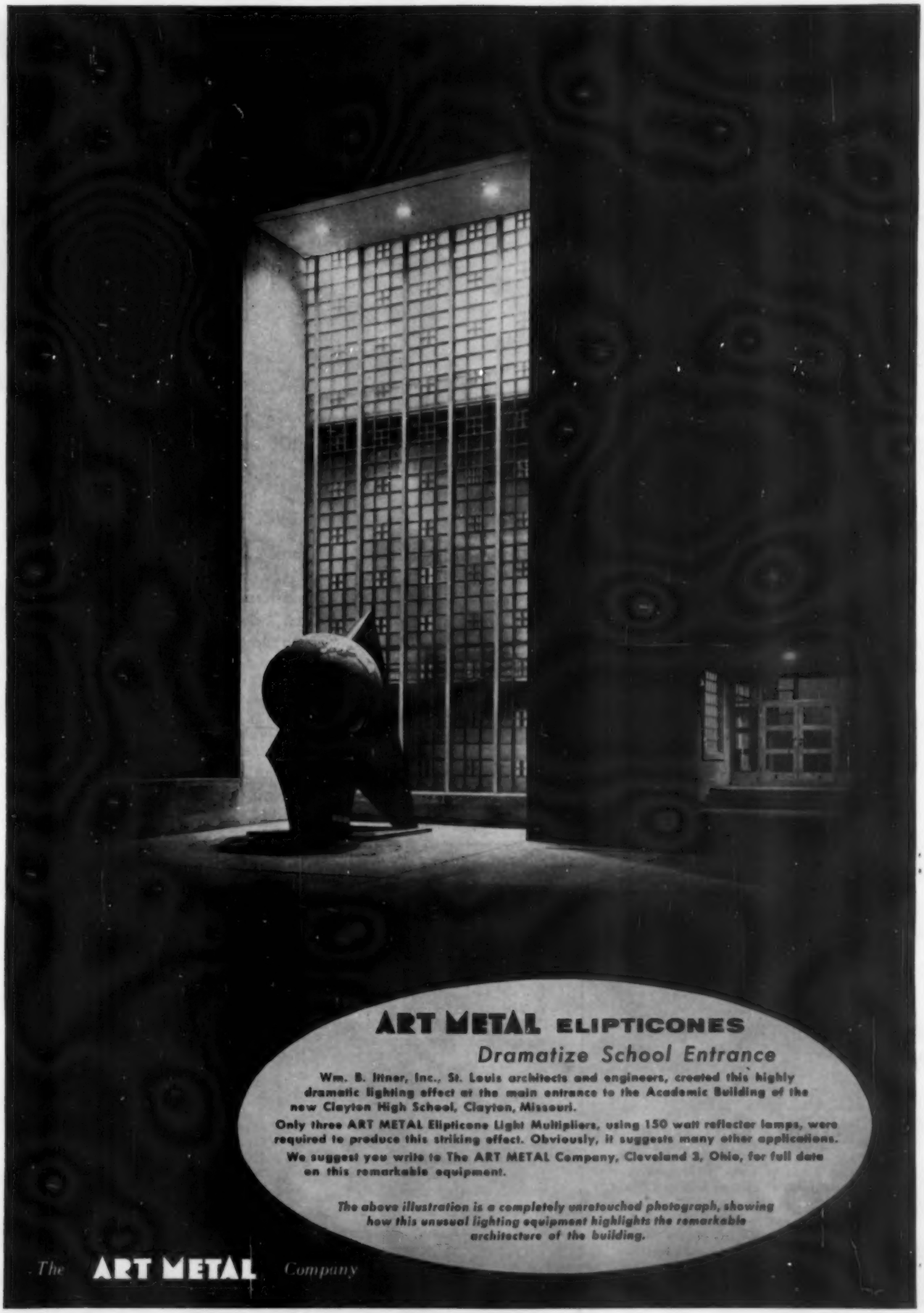
Everlasting shopper appeal with built-in COLOR

Drab store fronts today do not pay! Customers are attracted by *colorful* Kawneer Zourite (porcelain-enameled or alumilited aluminum). It is a facing material that resists chipping, cracking and fading, providing years and years of shopper appeal. Use it as a sign backing, and as a covering for columns, pilasters, bulkheads, soffits and pylons. Plan now to remodel store fronts with practically no interference to normal operations using Kawneer Zourite, doors, store-front metal and sun-control products. See your Kawneer dealer or write for additional information.

Kawneer Aluminum Zourite Facing in ten attractive colors

- Velvet Black
- Alumilite
- Alumilite Gray
- Academy Blue
- Marine Blue
- Harvest Brown
- Spring Green
- Sunset Red
- Winter White
- Flame Orange

Kawneer
General Offices
NILES, MICHIGAN
ARCHITECTURAL PRODUCTS DIVISION



ART METAL ELIPTICONES

Dramatize School Entrance

Wm. B. Ittner, Inc., St. Louis architects and engineers, created this highly dramatic lighting effect at the main entrance to the Academic Building of the new Clayton High School, Clayton, Missouri.

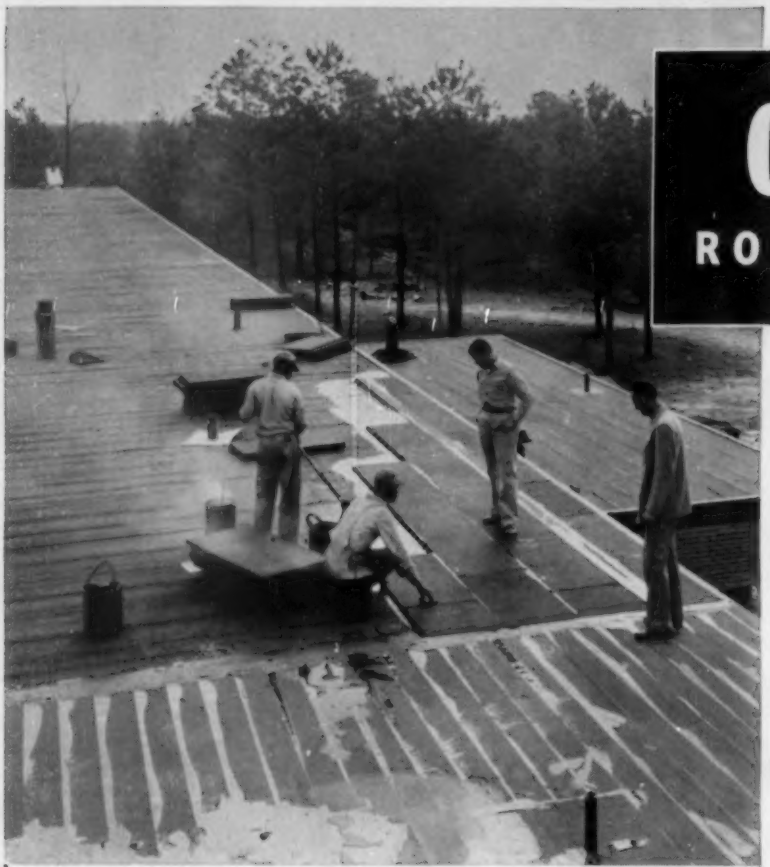
Only three ART METAL Elipticone Light Multipliers, using 150 watt reflector lamps, were required to produce this striking effect. Obviously, it suggests many other applications.

We suggest you write to The ART METAL Company, Cleveland 3, Ohio, for full data on this remarkable equipment.

The above illustration is a completely unretouched photograph, showing how this unusual lighting equipment highlights the remarkable architecture of the building.

The **ART METAL** *Company*

Job-preferred, job-proved ...for the nation's roofing needs



RESISTOL HAT COMPANY, Fur Felting Plant, Longview, Texas. Most modern in the world. Architect specified two car-loads of Celotex 1" Preseal Roof Insulation applied over vapor barrier (two fifteen-pound felts) on a steel deck.

Architect: Wyatt C. Hedrick, Dallas, Fort Worth, Houston
Roofing Contractor: H & C Sheet Metal Works, Longview

CELOTEX ROOF INSULATION

Leader in efficiency, durability, and economy... for over a third of a century

Because The Celotex Corporation pioneered roof insulation, you get the benefits of its broad research and production experience. Today, Celotex Roof Insulation is providing sound, dependable protection on buildings of all types across the country... in countless cases even after two and three decades of service.

It doesn't pay to gamble. It's unwise to specify untried materials that might lead to costly trouble after installation. Be sure to specify *job-proved* Celotex Roof Insulation ... to help insure lasting, trouble-free roofs requiring less maintenance, fewer repairs. Write today for detailed information: The Celotex Corporation, Dept. PA-65, 120 S. LaSalle St., Chicago 3, Illinois.

CELOTEX CANT STRIP

Strong, light, easy to handle and cut. Low in cost. Made of tough, rigid cane fiber board. Extends 4" up from deck and 4" out from wall—size 5⅝" x 46½". Cut-off right angle corner assures snug fit of roofing to wall, deck. Protected against dry rot and termite attack by exclusive Ferox® Process.

Only Celotex Roof Insulation Provides all these Important Features:

1. Resists Compression and Defies Rough Handling—So tough, loaded carts can be wheeled over it without damage.

2. Provides Excellent Bond—For hot mopped roofing felts of either asphalt or coal tar pitch type.

3. High Insulation Value—Reduces heating and air-conditioning costs, provides greater comfort the year 'round.

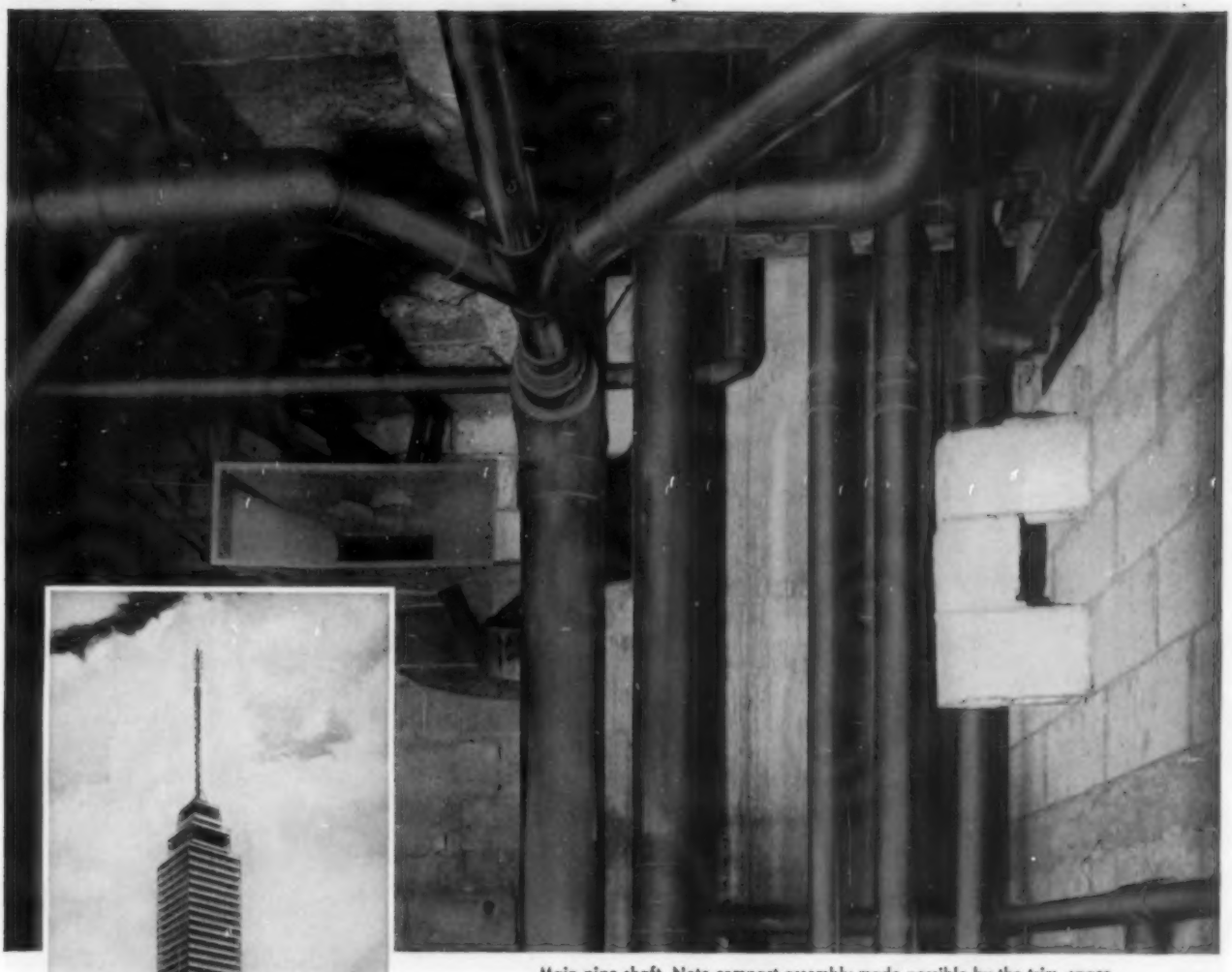
4. Low-Cost—Low initial cost, low applied cost, low maintenance cost.

5. Long Life—It is the only roof insulation made of tough, strong, interlocking Louisiana cane fibers, protected by the exclusive Ferox Process against dry rot and termite attack.

6. A Type for Every Job—Exclusive Channel-Seal, Preseal, Preseal "30", and regular.

It pays to specify genuine CELOTEX
REG. U. S. PAT. OFF.
ROOF INSULATION

THE CELOTEX CORPORATION • 120 S. LASALLE STREET • CHICAGO 3, ILLINOIS

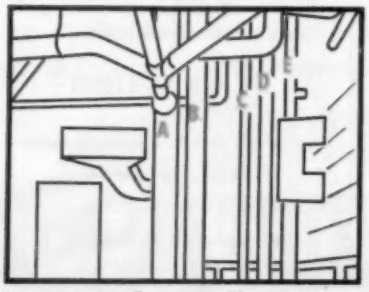


Main pipe shaft. Note compact assembly made possible by the trim, space-saving copper tube and fittings. See pipe sizing diagram below, left.

43-Story all-copper plumbing . . . in Mexico's tallest building

COPPER | **hot and cold water lines**
sanitary drainage system
roof drainage lines

Mexico's newest and tallest skyscraper. General Director: Adolfo Zeevaert, C. E. Constructed by the Engineering Department of "La Latino Americana, Seguros de Vida, S. A." Plumbing contractor, Técnica, S. A.



A. 8" soil stack. B. 6" vent. C. 3" hot water. D. 4" cold water. E. 3" waste for future use. Laterals to soil stack are 4". All sanitary drainage lines are Type M.

100,000 pounds of copper tube, Types K, L and M, provide lasting protection against rust in the plumbing system of this beautiful, ultra-modern office building of the Latino Americana Insurance Company, Mexico City. Tube sizes ranged from ½" to 12" incl. Anaconda tube was used throughout, with Nacional de Cobre of Mexico furnishing the smaller sizes.

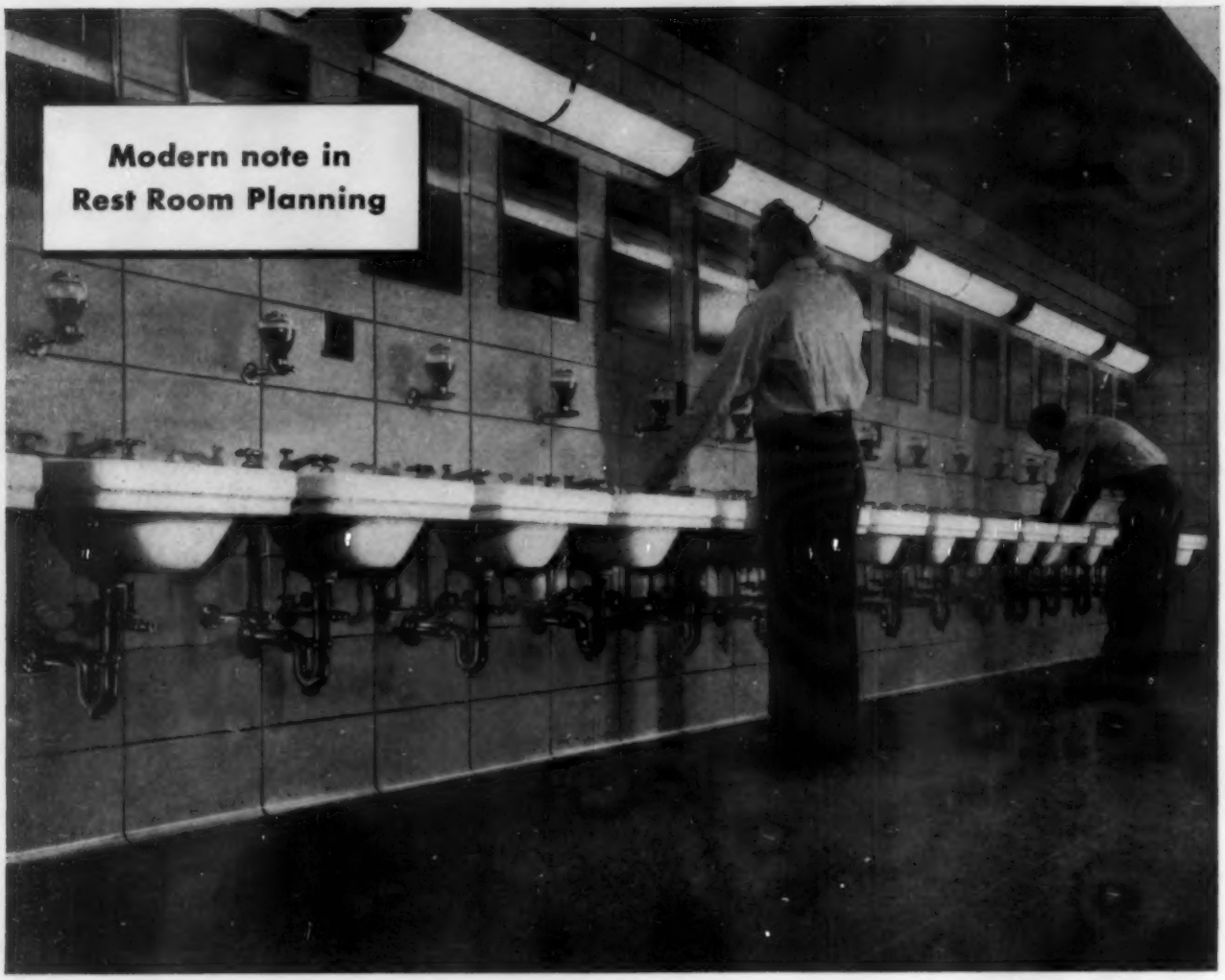
For a skyscraper or a small home, copper tube plumbing saves installation time and effort . . . often the over-all cost is less. Its light weight makes it easy to handle. Standard 20' lengths eliminate many joints. Assembly work with solder-type fittings is quickly and easily accomplished.

For economical, non-rusting plumbing specify ANACONDA Copper Tubes and ANACONDA Solder-Type Fittings. A wide range of sizes are stocked by Anaconda distributors throughout the country. Descriptive literature is available. Write to *The American Brass Company, Waterbury 20, Conn.* In Canada: *Anaconda American Brass Ltd., New Toronto, Ontario.* 5511

for copper tubes see your

ANACONDA®

distributor



Simplified Open Expanse *design*

contributes to cleanliness . . . builds lasting good will

■ What keeps a rest room like this looking so new and spic and span over the years while other rest rooms become obsolete? Good planning. Planning for *improved sanitation.* Planning for *attractive decor.* Planning for *lowest maintenance.* Planning for *construction economies.*

You achieve all 4 of these desirable points when you use *open expanse* design. And the key to this is a *fixture-free floor.*

The pleasing effect of uncluttered spaciousness in this rest room was obtained by using American-Standard wall-type plumbing fixtures installed with and supported by Zurn System behind-the-wall carrier fittings. This combination of superbly designed fixtures, and rigid supporting fittings especially engineered to relieve the wall of all the load, gives you an "age-proof" installation that insures against the untimely obsolescence of your rooms.

If you would like to know more about the advantages of American-Standard wall-type plumbing fixtures and the Zurn System, we would be pleased to send you two interesting booklets which contain up-to-date information on these essential products. Just ask for the American-Standard "Better Rest Room Guide" and the Zurn booklet, "You Can Build It For Less A New Way."

AMERICAN-Standard

off-the-floor fixtures
installed with and supported by the

ZURN **system®**

give you these important benefits—

- insured sanitation
- simplified maintenance
- modern appearance

American Radiator & Standard Sanitary Corporation, Pittsburgh, Pa.

J. A. Zurn Mfg. Co. (Plumbing Division), Erie, Pennsylvania

VAMPCO *Presents*

A NEW *Tubular* WINDOW

SERIES "T-500"

COMPLETELY WEATHER STRIPPED

•

TUBULAR SECTIONS FOR GREATER STRENGTH

•

INSIDE GLAZED WITH SNAP-ON GLAZING BEAD

•

ALL SECTIONS ⅛" MINIMUM THICKNESS

•

FORGED ALUMINUM HARDWARE

Here is the answer to several of the Architect's major problems. The VAMPCO SERIES "T-500" Window.

This series of windows provides strength with comparative lightness due to the tubular construction of the component sections. It is designed to meet the demands for the larger expanses of glass areas in modern architecture.

Ventilators are of tubular construction 1-13/16" deep with two point weather stripping. Series "T-500" windows are manufactured in standard and custom sizes—Write for catalog . . . Department PA-65.

VAMPCO®

A NAME THAT MEANS THE VERY FINEST IN LIFELONG ALUMINUM WINDOWS

VALLEY METAL PRODUCTS COMPANY

PLAINWELL MICHIGAN

A Subsidiary of Mueller Brass Co., Port Huron, Michigan

Rippel Architectural Metals, Inc., uses

MILLION POUNDS OF ALCOA ALUMINUM IN PRUDENTIAL'S NEW CHICAGO SKYSCRAPER

Nearly a million pounds of Alcoa® Aluminum will be used in building Chicago's newest skyscraper, the modern mid-American home office of The Prudential Insurance Company of America. When completed in 1956, the 41-story structure will be the fifth largest office building in the United States, with more than one million square feet of rentable space.

From an architectural standpoint, the new skyscraper presents a striking appearance. Its exterior facing features the use of 2,650 gleaming aluminum panels set in continuous vertical lines. Combination window-and-spandrel units, the panels have flanges that cap adjoining masonry columns.

The use of aluminum panels on the new Prudential Building is an outstanding example of the rapidly increasing trend toward aluminum as an exterior wall-facing material. Easy to erect, aluminum panels offer long-lasting beauty, high insulating value and virtually maintenance-free service. Aluminum Company of America, 1890-F Alcoa Building, Mellon Square, Pittsburgh 19, Pennsylvania.

The fine workmanship shown in the panels and their exceptional uniformity in color both demonstrate the experience and know-how of the Rippel team.

Architect—
Naess & Murphy,
Chicago, Ill.

General Contractor—
George A. Fuller Co.,
New York, New York

Aluminum Subcontractor—
Rippel Architectural
Metals, Inc.,
Chicago, Ill.

Panels are completely prefabricated in the Rippel company's modern, well-equipped Chicago plant and are installed by Rippel's own expert construction crews.

All exterior aluminum construction is the work of Rippel Architectural Metals, Inc., of Chicago, which saw the job from their own drawing boards to finished installation.

YOUR GUIDE TO ALUMINUM VALUE

ALCOA ALUMINUM

ALUMINUM COMPANY OF AMERICA

MITCHELL Lighting chosen

for the Imperial Camera Shop

HAROLD SOFFER, owner

Mr. Soffer's many years of experience as a store owner has made him well aware of the influence of proper store design on increased sales and properly directed store traffic.

"In my opinion," states Mr. Soffer, "the single most important element in a well-designed store is the lighting. Mitchell 'Polaris' fluorescent units were chosen for my store because of their modern design and their economical adaptation to pattern lighting installations. I have found that these fixtures provide a soft lighting effect with no disturbing glare upon glass showcases and displays."

MITCHELL LIGHTS ANOTHER STORE

Imperial Camera Shop
Berwyn, Illinois

Architect: Nerad and Carlson, Clarendon Hills, Illinois
Electrical Contractor: M. G. Electric, Cicero, Illinois
Distributor: Standard Electric Supply Co., Chicago

INSTALLATION: Flush-mounted MITCHELL "Polaris" two-lamp luminaires. Twelve incandescent downlights highlighting displays and major working areas. An average of 75 footcandles is maintained.

for better store lighting,
SPECIFY MITCHELL

Write for complete details on MITCHELL store and other commercial lighting

MITCHELL MANUFACTURING COMPANY
2525 Clybourn Ave., Chicago 14, Ill., Dept. 5-F
In Canada: Mitchell Mfg. Co., Ltd., 19 Waterman Ave., Toronto

A MODEL FOR EVERY TYPE OF DOOR IN ANY TYPE OF BUILDING

DOR-O-MATIC

CONCEALED-IN-THE-FLOOR DOOR CONTROLS

Diagram shows how door is controlled as it opens. Accidental openings are eliminated . . . as are accidental hold-opens. The control also cushions the closing of door.

- BUILT-IN HOLD-OPEN DEVICE
- POSITIVE BACK STOP
- POSITIVE CENTERING
- BUILT-IN LEVELING DEVICE
- NO ACCIDENTAL HOLD-OPEN
- TWO SPEED CLOSING ACTION
- PERMANENT HYDRAULIC OIL SEAL
- POSITIVE UNIFORM CONTROL
- NO SEASONAL ADJUSTMENT
- EASY INSTALLATION

Precision-built Dor-O-Matic door controls are at work in thousands of buildings from coast to coast . . . where they are providing more positive door closing action. There are twenty-five models in all. Each is designed for long service life under all conditions and complete adaptability to contemporary design and function. Only Dor-O-Matic provides all ten of the service advantages listed at left.

Write for Detailed Information and Literature

MADE BY THE BUILDERS OF THE INVISIBLE DOR-MAN

AUTOMATIC DOOR CONTROL

SEE SWEET'S ARCHITECTURAL FILE
17e
Re

DOR-O-MATIC

DIVISION OF
Republic Industries, Inc.
4446 North Knox Avenue • Chicago 30, Illinois

1563

Growing idea for non-residential roofing, too—

CERTAIN-TEED WOODTEX ASPHALT SHINGLES

CHURCHES—Redeemer Lutheran Church, Bartlesville, Okla. The rugged appearance of Woodtex Shingles lends itself to church architecture. Builder and Applicator: Cooper & Dorris Const. Co. Supplier: Overlees-Krause Lbr. Co., both of Bartlesville.

SCHOOLS—"Garfield Center" at the Erie College for Women, Painesville, Ohio. Woodtex Shingles provide wind resistance and a pleasing pattern for this long, low pitch roof. Roofing Contractor: Guaranteed Roofing & Sheet Metal Co.

MOTELS—York Motel, Parma Heights, Ohio. The fire resistance of Woodtex Shingles is an important safety feature here. Builder and Applicator: Precision Housing Corp., Parma Heights. Supplier: Askue Supply Co., Cleveland.

TAVERNS—Valley Forge Tavern, King of Prussia, Pa. Woodtex Shingles in handsome gray blend add distinction to this popular stopping place. Woodtex Shingles come in a beautiful range of popular new colors and pastel blends. Applicator: Thomas Lord, Collegeville, Pa.

Look where you'll find Woodtex Asphalt Shingles today. On churches, shopping centers, apartment houses, college and school buildings, motels—as well as on many of the finest homes.

It's an important trend... this increasing use of Woodtex in non-residential construction. Don't overlook it. Certain-teed Woodtex is the fire-resistant asphalt shingle with the genuine built-up graining. This graining acts as reinforcing ribs, which add strength, rigidity and weight—give extra protection against wind and weather you can't get with ordinary asphalt shingles. Woodtex Shingles are heavy and durable, and their handsome, massive appearance and beautiful range of new colors can add distinction to any building.

Are you using Woodtex Shingles for non-residential roofing? A line to Certain-teed now will bring full information on why it pays.

Certain-teed

REG. U.S. PAT. OFF.

Quality made Certain... Satisfaction Guaranteed

CERTAIN-TEED PRODUCTS CORPORATION

ARDMORE, PENNSYLVANIA

EXPORT DEPARTMENT: 100 EAST 42ND ST., NEW YORK 17, N.Y.

ASPHALT ROOFING • SHINGLES • SIDING • ASBESTOS CEMENT ROOFING AND SIDING SHINGLES
GYPSUM PLASTER • LATH • WALLBOARD • SHEATHING • ROOF DECKS • FIBERGLAS BUILDING INSULATION
ROOF INSULATION • SIDING CUSHION

Write in the specification that keeps out failure . . .

CAST IRON SOIL PIPE

When house drainage and sewer lines run under basement floors, under driveways, landscaping and lawns there are just four words to write into your specs for permanence: **Cast Iron Soil Pipe** (with lead-locking ring in hub and beaded spigot).

And with the same tried and tested words, you'll guard soil stacks, drainage branches and vent stacks against costly repairs and replacement. Using cast iron, the plumbing drainage system you plan has the same life expectancy as any structure in which it is housed. It's good to specify **Cast Iron Soil Pipe** from sewer to rooftop.

PERMANENT CAST IRON SOIL PIPE

has *all* these advantages:

- Rugged metallic strength
- Zero moisture absorption
- Permanent tightness of joints, with flexibility
- The *only* pipe accepted in all codes for use from street to roof

CAST IRON SOIL PIPE INSTITUTE

Dept. PA-6, 1627 K Street, N. W.
Washington 6, D. C.

☐ Send me_____copies of your new 12-page booklet "Best in the Long Run" that shows—with actual photographs and authenticated captions—what can happen to lines that aren't *Cast Iron*.

Name_____

Address_____

City_____ Zone_____ State_____

Like Easy Bending?

GET NE Sherarduct
RIGID STEEL CONDUIT

Easy bending and fast installation go hand in hand. That's why so many cost conscious contractors prefer National Electric Sherarduct rigid steel conduit. They've found the gradual heating and cooling of NE's Sherardizing process of dry galvanizing normalizes the metal in an annealing-like process that assures easier working, forming and bending on the job.

And they like other Sherarduct features as well. For example:

EASY FISHING . . . In addition to a smooth inside surface, Sherarduct's accurately cut threads let conduit ends butt inside the coupling . . . eliminate gaps that interfere with easy fishing.

LIFETIME PROTECTION AGAINST CORROSION . . . The Sherardizing process that alloys zinc with the conduit wall, plus a baked-on Shera-enamel coating fortifies Sherarduct against rust and corrosion for life. All surfaces, including the hill and valley of every thread, are securely protected against corrosion.

Write for a free copy of our Sherarduct facts book. You'll see why Sherardizing makes Sherarduct "galvanized conduit at its best."

LIFE-TIME CORROSION PROTECTION
•
EASY FISHING
•
ZINC PROTECTED THREADS
•
STRONG COUPLINGS
•
THOROUGH GROUNDING
•
EASY BENDING

Listed by Underwriters' Laboratories, Inc.

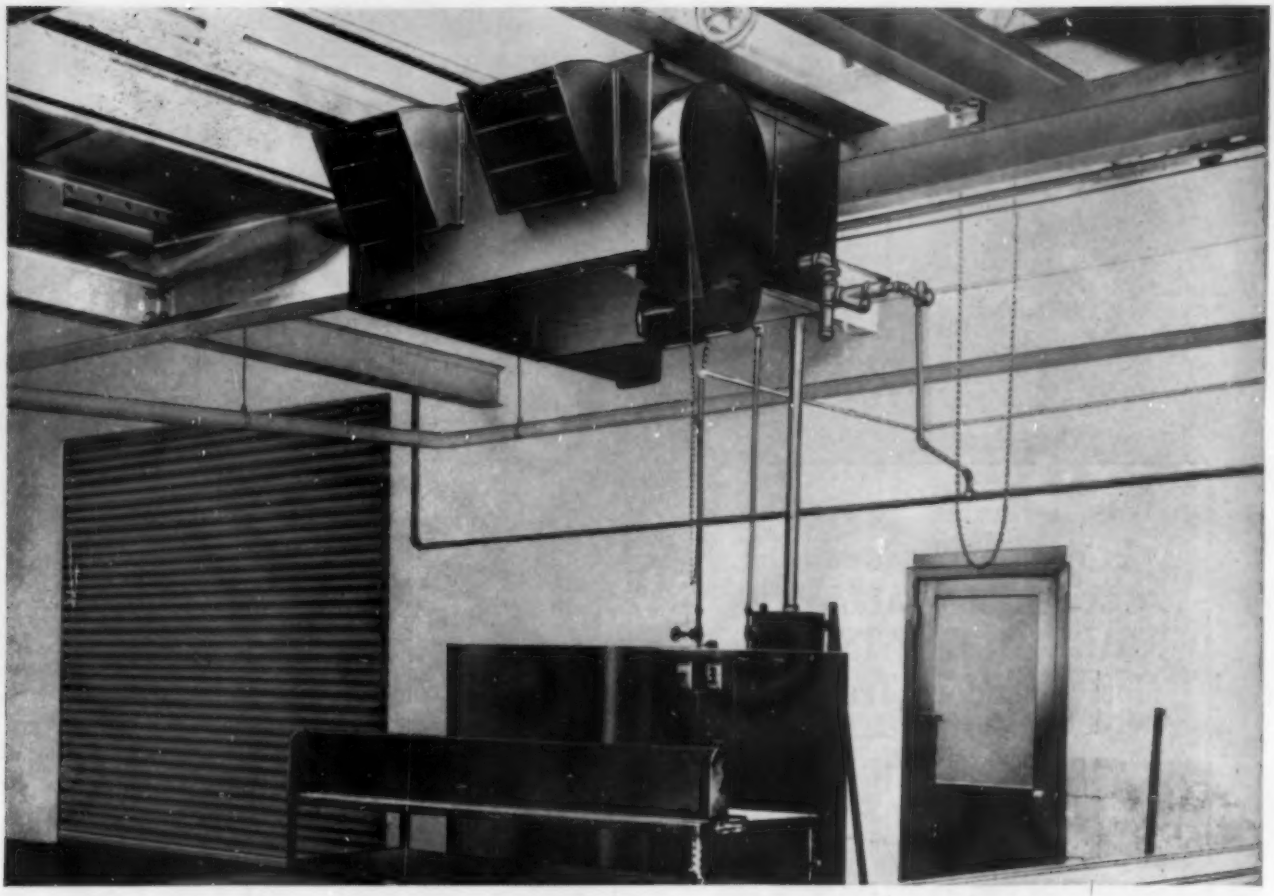
Sherardizing is galvanizing at its best . . . Sherarduct is galvanized conduit at its best

NATIONAL ELECTRIC PRODUCTS CORP. PITTSBURGH, PA. 50TH ANNIVERSARY 1905–1955

National Electric Products

PITTSBURGH, PA.

3 Plants • 10 Warehouses • 36 Sales Offices



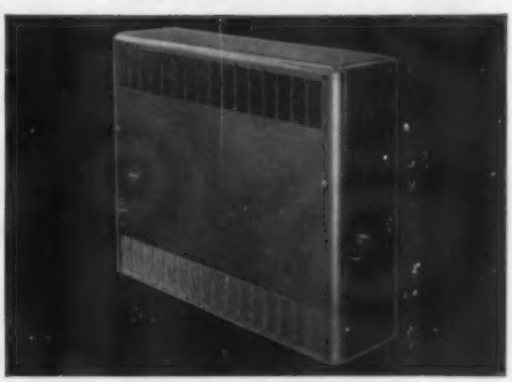
NEW DUNHAM BLOWER UNIT HEATERS . . . IN TYPES AND CAPACITIES TO FIT EVERY NEED

Dunham's newly redesigned line of blower unit heaters is one of the most broad and complete in the industry. Seventeen different sizes . . . in 170 ratings from 12?,000 to 1,500,000 BTU . . . 1,430 to 20,800 CFM.

Dunham Blower Unit Heaters can be mounted on ceilings, walls or on floors. They solve any heating, ventilating, air cleaning, process heating or drying problem. A wide variety of nozzle and nozzle-extension arrangements lets you "pinpoint" or widely diffuse warmth where needed. Heaters can be used with or without ducts . . . with bypass damper, filter section and mixing dampers to handle any of your client's usual . . . or unusual . . . space or process heating and ventilating requirements.

And For Spot Heating, Dunham offers an unusually complete line of propeller fan unit heaters . . . cabinet types for floor—or wall-mounted installations . . . horizontal and vertical discharge heaters for overhead applications.

For full information, clip and mail the coupon.



Dunham Cabinet Unit Heater, for steam or hot water, capacities from 10,000 to 108,000 BTU.

DUNHAM HEATING & COOLING EQUIPMENT

RADIATION • CONTROLS • UNIT HEATERS • PUMPS • SPECIALTIES

QUALITY FIRST FOR OVER FIFTY YEARS

C. A. DUNHAM COMPANY • CHICAGO • TORONTO • LONDON

C. A. DUNHAM COMPANY
Dept. PA-6. 400 W. Madison St., Chicago 6, Ill.

Please send Unit Heater literature.

Name_____

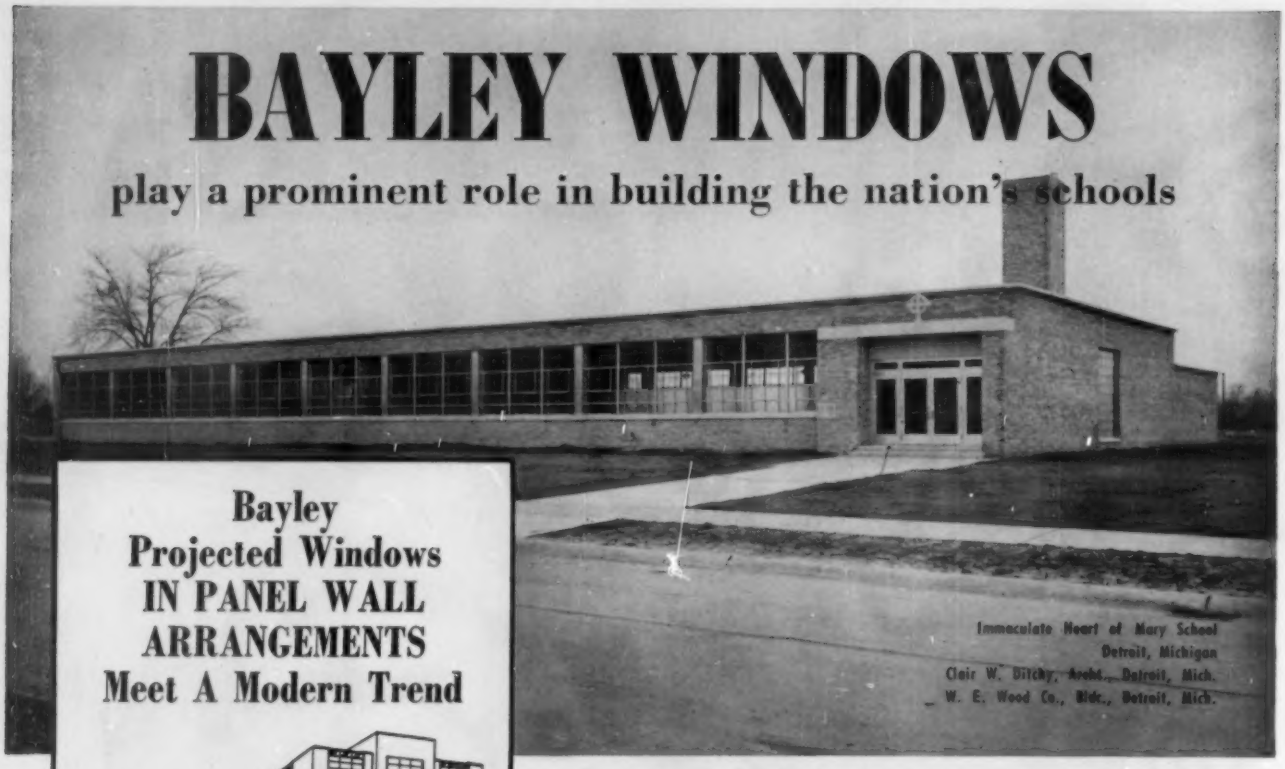
Company_____

Address_____

City_____ Zone_____ State_____

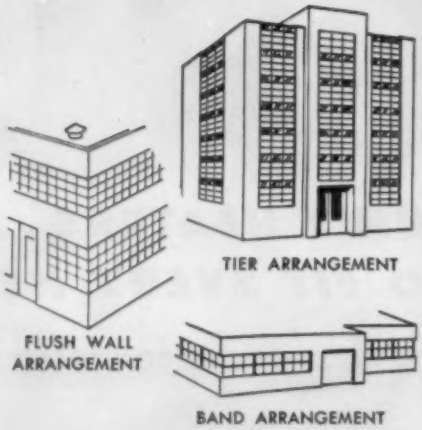
BAYLEY WINDOWS

play a prominent role in building the nation's schools



Immaculate Heart of Mary School
Detroit, Michigan
Clair W. Ditchy, Archt., Detroit, Mich.
W. E. Wood Co., Bldr., Detroit, Mich.

Bayley Projected Windows IN PANEL WALL ARRANGEMENTS Meet A Modern Trend



Without the costliness of special window designing you can now execute many of your design treatments in modern panel-wall or "skin" construction. With Bayley sub-frame design, which accommodates separate window units, standard Bayley Aluminum Projected Windows (with channel frames) of any standard size can be used — offering wide flexibility in the use of newer panel decorating materials, plus the desired window area for providing maximum air, light and vision.

75 Years of RELIABILITY

Bayley Projected Windows

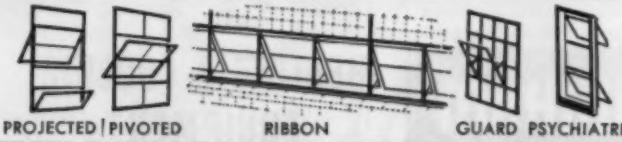
provide the modern school with better ventilation, vision and natural daylighting

The "better-serve" policy that, for so many years, has keynoted Bayley's client relationship is readily apparent in numerous ways. Constant improvement in product detail and quality is one. Another is exemplified in the Bayley Aluminum Projected Window (offered also in steel) that was designed to provide the window features requested by school authorities. Such features as:

Modern appearance • Economy—painting unnecessary • Permanence — long carefree life • Simplicity — no complicated mechanism • Adaptable to all types of construction • Glazing outside — flat surface inside • Easily washed from inside • Prepared for screens • Permits use of accessories, such as draperies, shades, curtains, venetian blinds or awnings.

Whatever your window requirement may be, Bayley's years of specialized window experience can undoubtedly be of value to you. Write or phone.

See Bayley in Sweet's. Complete catalogs on aluminum windows, 16a/Bay; steel windows, 16b/Ba.



THE WILLIAM BAYLEY COMPANY

Springfield, Ohio

District Sales Offices:

Springfield Chicago 2 New York 17 Washington 16

"Operating-Maintenance Costs Cut with Kewanee Boilers"

Noel Spannagel, Chief Engineer, Famous-Barr Company

Here are 3 installations of Kewanee Boilers at Famous-Barr Company

Installation—
2—7L89 Kewanee Type "C" Boilers

Heating Contractor: Eichler Company; Architect: P. J. Hoerner; Engineer: John D. Falvey

Installation—
2—7L87 Kewanee Type "C" Boilers;
1—7L82 Kewanee Type "C" Boiler

Heating Contractor: Eichler Company; Architect: Russell-Mulgardt-Schwarz-Van Hoefen; Engineer: John D. Falvey

Installation—
2—490 Kewanee Firebox Boilers;
2—324 Kewanee Firebox Boilers;
1—308 Kewanee Firebox Boiler

Heating Contractor: Eichler Company; Architect: Will Levy

KEWANEE reserve plus rated boilers

...PREFERRED BY FAMOUS-BARR FOR OVER 1/4 CENTURY

Back in 1928 the Famous-Barr Company, St. Louis, installed 2 Kewanee Stoker Fired Boilers in a warehouse . . . so began an experience with Kewanee Boilers that has extended over the past quarter century. As they expanded, as new buildings called for more power, Kewanee was the preferred boiler installation every time. But let Noel Spannagel, Famous-Barr's chief engineer, tell the story:

"My previous experience proved Kewanee offered important savings in operating and maintenance as compared with other boilers." Famous-Barr long has known the advantages assured by Kewanee Reserve Plus Rated Boilers such as provision for expansion—"cruising speed" operation which lowers operating and maintenance costs and lengthens boiler life. So when you consider boilers, be sure they are rated on nominal capacity to operate at "cruising speed."

Don't be misled by promises that a boiler delivers steam to meet average daily requirements. Only a boiler rated on nominal capacity can guarantee performance beyond the call of usual duty.

KEWANEE BOILERS

KEWANEE-ROSS CORPORATION, Kewanee, Illinois
Division of American Radiator & Standard Sanitary Corporation
Serving home and industry - American Standard - American Blower - Church Seats & Wall Tile - Detroit Controls - Kewanee Boilers - Ross Exchangers - Sunbeam Air Conditioners

YOU can depend on KEWANEE engineering

How* to get highest quality at reasonable cost in light institutional construction

Penmetal LIGHTSTEEL structural sections are the answer.

These steel sections are scientifically designed for maximum economy strength-to-weight ratio. No longer must you pay for load carrying capacity which you don't need. Yet LIGHTSTEEL sections carry all the benefits of conventional steel framing, and then some. Example: Precisely engineered openings in the sections which simplify through-frame installation of wiring and plumbing.

You save on erection, too. Joists, studs, track and bridging are designed to fit together for ease of assembly and welding in the shop or at the job site. Because of the light weight of the sections complete wall panels and roof trusses can be readily trucked to the job site and erected in a few hours.

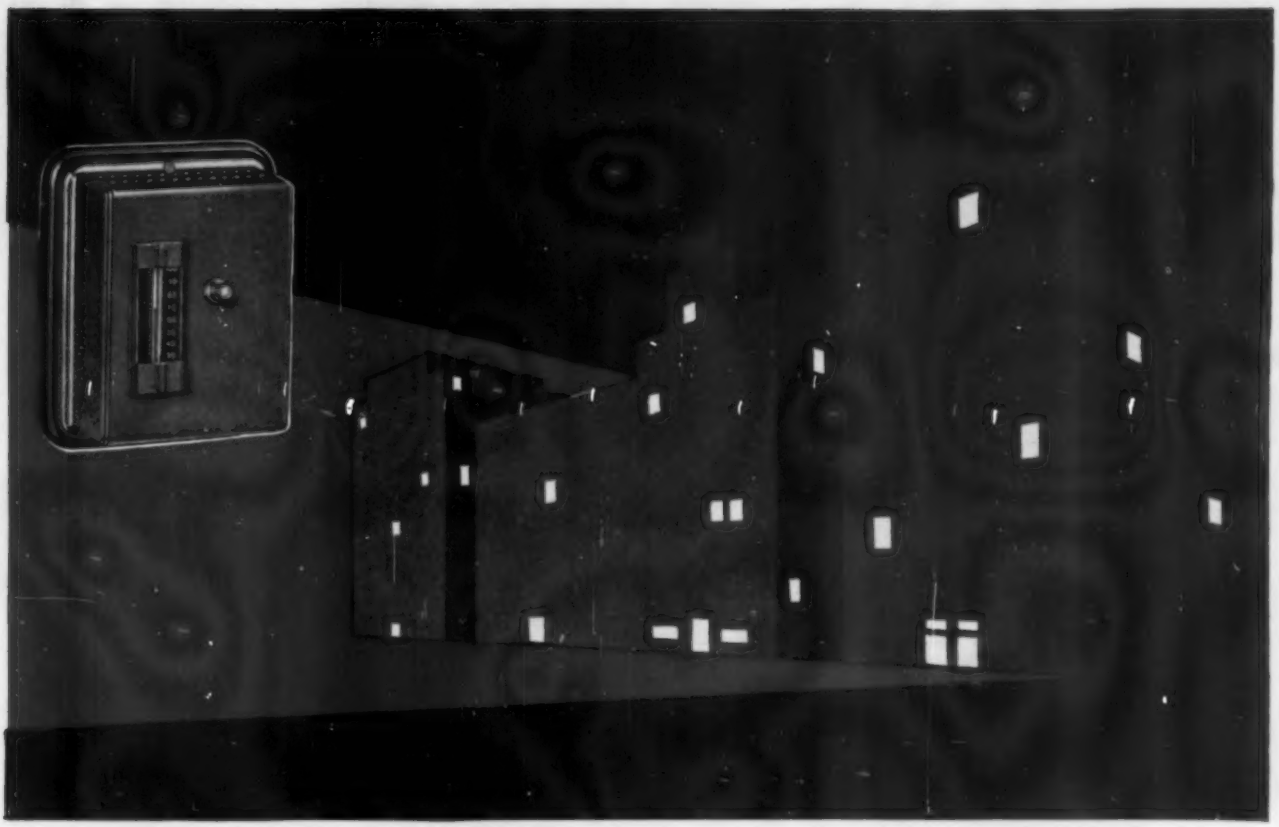
Send for catalog SS-6, which gives complete specifications, engineering data and safe loads for all stud and joist sections.

Penmetal

PENN METAL COMPANY, INC.

General Sales Office:
205 East 42nd Street, New York 17, New York
Plant:
Parkersburg, W. Va.

PM-77



HEAT ONLY THE OCCUPIED ROOMS—CUT FUEL COSTS with JOHNSON *DUAL* TEMPERATURE CONTROL

In most buildings today, certain offices continue to be occupied after regular working hours. Keeping those few offices comfortably warm, *without the expense of heating the entire building,* is a serious problem to building owners and managers. Installing separate steam mains is usually both impractical and too costly. Manual control of radiators in unoccupied offices is equally unsatisfactory.

The simple, effective answer to this "after-hours" heating problem is a modern *Dual* System of Johnson Automatic Temperature Control. Briefly, here's how it works:

During regular working hours, a Johnson *Dual* Thermostat in each office automatically maintains every space at the ideal comfort level. At the end of the day, all *Dual* Thermostats in the building may be reset, from a central control panel, to operate at *reduced, non-occupancy temperatures.*

In those offices which continue in use, merely pressing the button on the *Dual* Thermostat restores them to normal occupancy temperatures, *without changing the economy settings of the other thermostats in the building.*

Johnson *Dual* Control offers the finest in modern individual room temperature regulation—and at a tremendous reduction in fuel costs. Heating only the occupied rooms quickly saves enough fuel dollars to pay for the cost of the entire system!

These and many other important comfort and money-saving advantages of Johnson *Dual* Control are readily available to any new or existing building. Conversion of existing single temperature systems to Johnson *Dual* is both simple and inexpensive. An engineer from a nearby Johnson branch will gladly give you all the facts without obligation.

JOHNSON CONTROL

TEMPERATURE AIR CONDITIONING

PLANNING • MANUFACTURING • INSTALLING • SINCE 1885

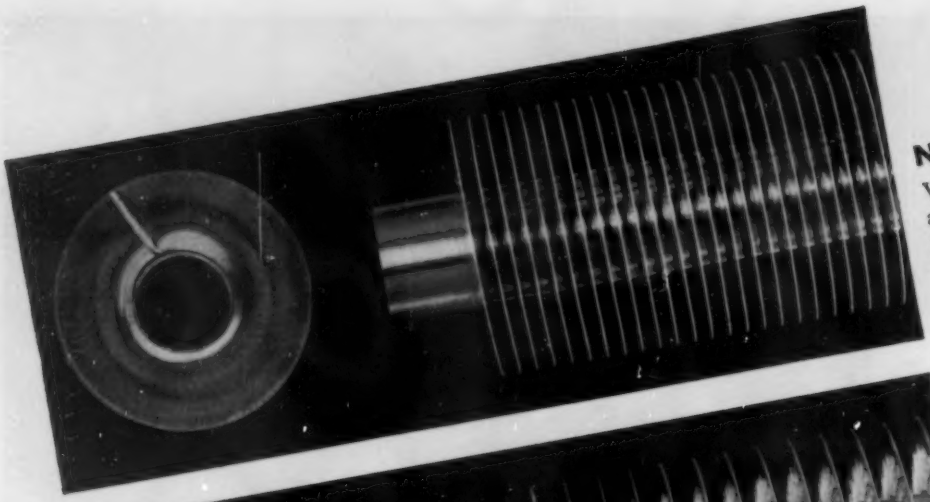
JOHNSON SERVICE COMPANY
507 G Michigan St., Milwaukee 2, Wisconsin

I'd like more information about Johnson Dual Temperature Control.

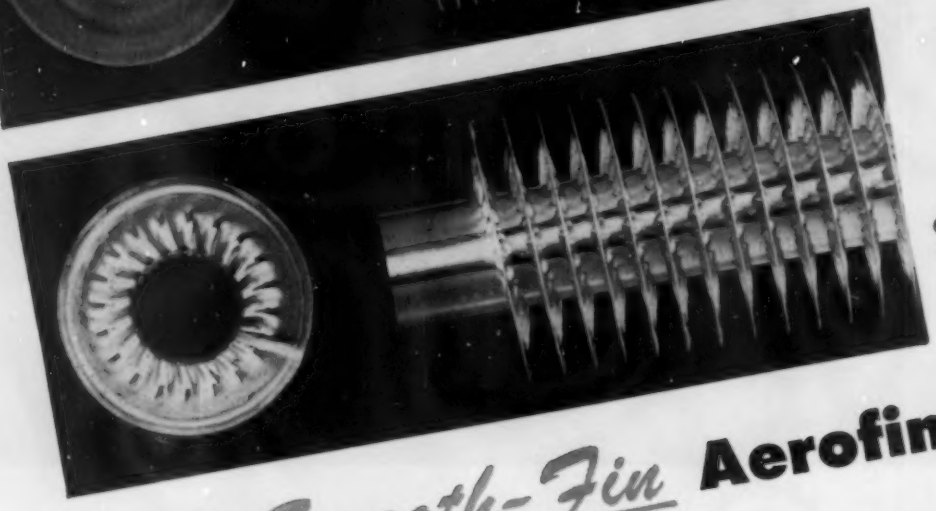
NAME_____

ADDRESS_____

CITY & STATE_____



New Smooth Fins
Wide base provides ample contact surface. Smooth fins can be closely spaced without increasing resistance.



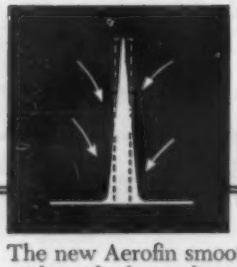
Old Type Fins
Crimped to provide necessary contact surface, widely spaced to reduce air friction.

NEW *Smooth-Fin* Aerofin Coils
for Greater Capacity— Lower Resistance

Aerofin extended-surface heating and cooling coils now offer you an even greater area of effective surface — even greater capacity — per square foot of face area. Airway resistance is lowered; higher air velocities can be used. The result is extremely high heating or cooling capacity in a given space.

Compact, sturdy, standardized encased units arranged for simple, quick, economical installation.

Write for Bulletin S-55



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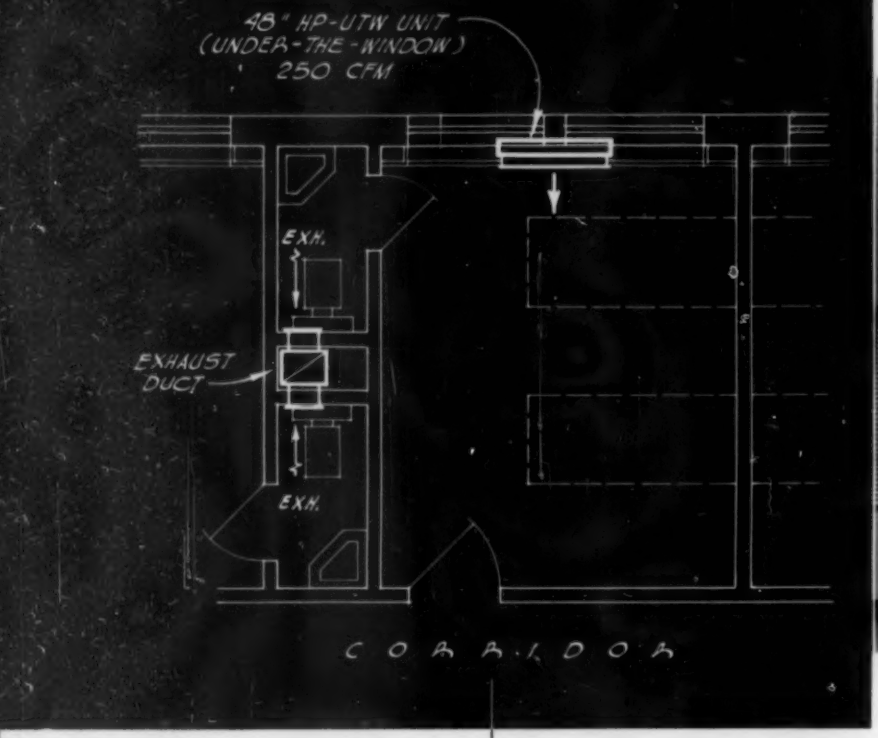

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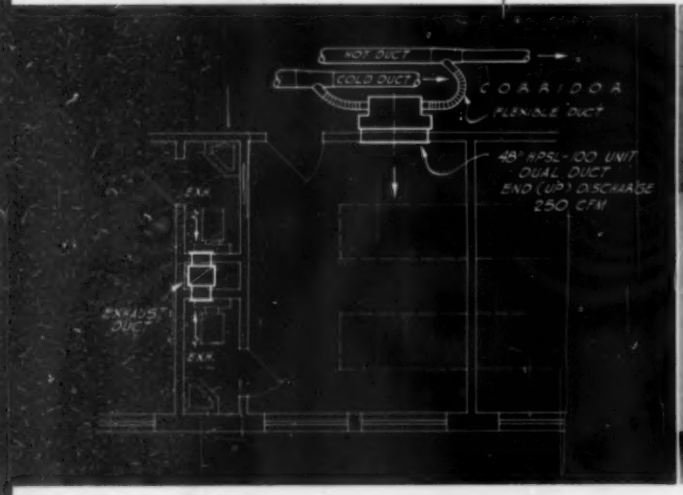

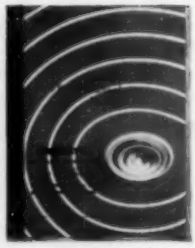

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p/a news report

AIR ACADEMY

U.S. Air Force Exhibits Plans At Colorado Springs

Photos: U.S. Air Force

At architectural unveiling (l.-r.) *Senator Allott, Secretary Talbott, Senators Robertson, Stennis, Welker.*

By George A. Sanderson

COLORADO SPRINGS, COLO., MAY 14, 1955—The architectural design for the permanent United States Air Force Academy, to be built on an unparalleled site seven miles north of here, was unveiled today for the first time to Senators, Representatives, newsmen, and others. I was one of the fortunate editors to fly out

from New York as a guest of the Air Force to attend the ceremonies, held at the Colorado Springs Fine Arts Center, where detailed models and renderings of the design were on display.

In my opinion, Skidmore, Owings & Merrill as architects-engineers for the Academy have developed one of the most remarkable and natural accommodations of an architectural complex to terrain that has ever been achieved in any major project. And they have reached that goal, which Nathaniel Owings, one of the partners, has defined as the wish "to produce for generations to come—not just for today or for fifty years hence—an efficient, flexible, and simple solution . . . and yet, and above all, beautiful, lastingly beautiful." Of the $126 millions authorized by Congress for construction of the Academy, the amount allocated for buildings is $58 millions.

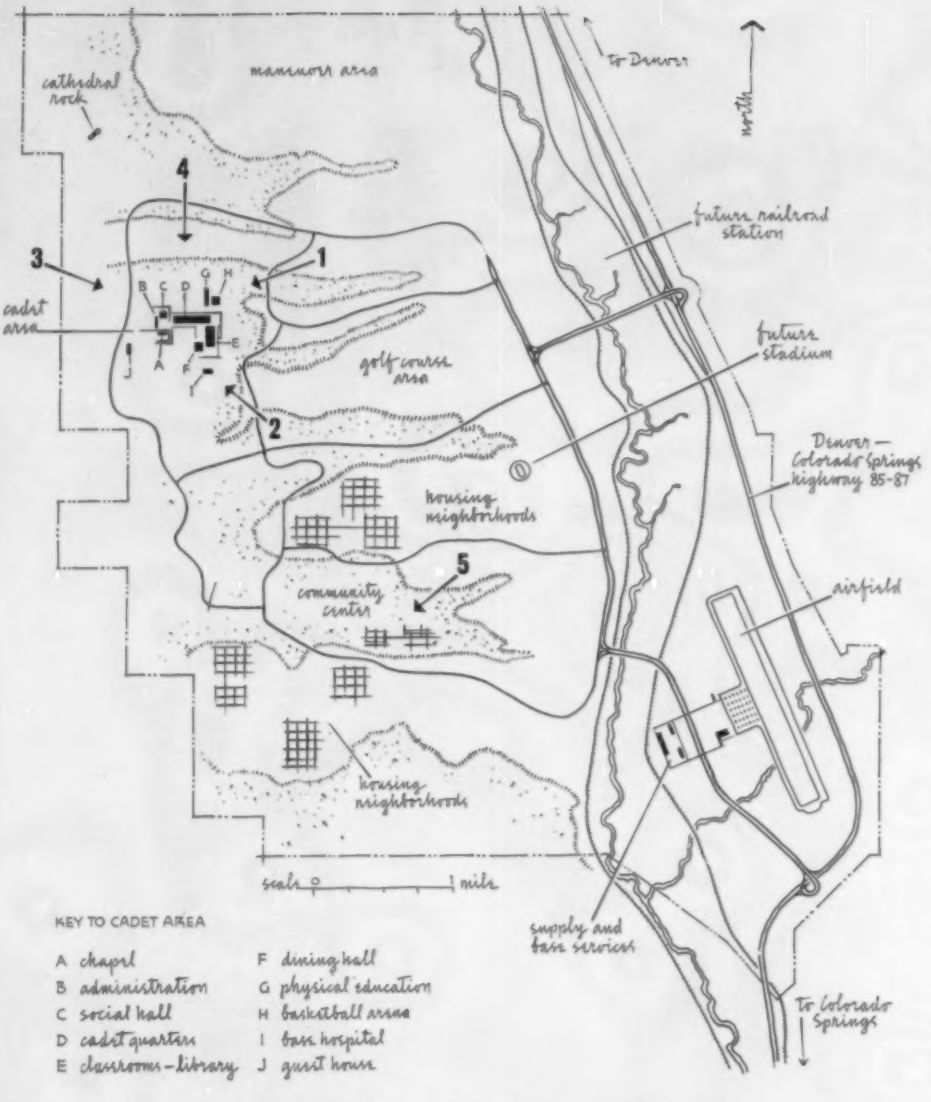
I had known that the site for the Academy was 17,500 acres in extent. But this statistic conveyed to me no inkling of either the vastness or grandeur of this campus setting. It is one of the largest areas ever chosen for an instructional institution—7½ miles north to south and an average of 5½ miles east to west.

The western boundary consists of the rugged heights of the Rampart Range of mountains that thrust violently upward 2000 to 3000 feet above the Academy site—a permanent natural protection and barrier for the campus. Extending eastward from the mountains are five promontories of land, considerably wooded with ponderosa pine, with gentle grassy valleys between studded here and there with yucca and cactus in the ruddy earth. Yet farther east is more-or-less level land, and near the eastern boundary — though contained within the Academy site to provide a permanent buffer against the commercial inroads of the usual highway ribbon slum—is the main highway from Colorado Springs to Denver. Beyond the eastern boundary are the endless tawny plains of eastern Colorado, which become part of the breathtaking view from upper reaches of the campus.

Side Plan

To understand how superbly the architects have co-ordinated the site with the buildings, one must first know the basic "problem" and the major areas for which provision had to be made. To oversimplify, there were four major functions that had to be implemented in the design:

1. **Cadet Area**, or academic group proper—Cadet Quarters for the presently authorized Cadet complement of 2496 men, but expandable, should this ever become desirable, up to 5000; Classroom-Library building; Cadet Dining Hall; Administration Building; Social Hall; Court of Honor; and Cadet Chapel; athletic facilities, and parade and drill ground. Also related to this basic group in the



Numerals on site plan, developed by E. A. Bennett, P/A drafting chief, from USAF tour maps and photos of architects' models, are keyed with the numbered illustrations.

1

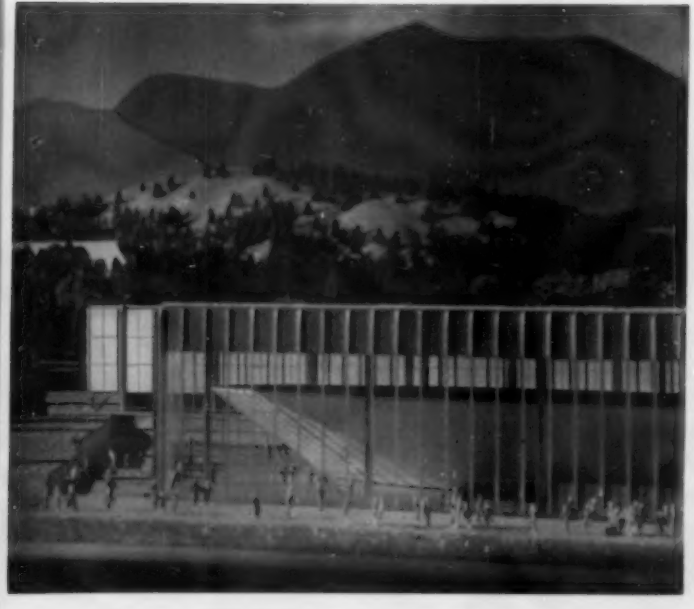
U.S. Air Force: Photos by Ezra Stoller

2

Looking down to the Court of Honor at the western end of Cadet Area (above), *one sees the Chapel on its eminence at left; the Social Hall, with theater, ballroom, and lounges, at right; and the Administration Building, in the background.*

General view from the northwest (below). *Starting at top and reading clockwise: Classroom-Library Building; Dining Hall; Base Hospital; Chapel; Administration Building; Social Hall; and Cadet Quarters.*

3



Ziggurat-like, the different levels of the Cadet Area are joined by ramps (left). *Topping the rampart at far left is the huge Cadet Quarters Building. Note the central open floor, with two enclosed levels above and below. The mass of the Social Hall towers in the background. At right of photo, the basketball arena, with its glass cage enclosing a bowl-shaped stadium.*

planning are the Superintendent's house; Base Hospital; and Academy guest house.

2. **Housing Neighborhoods** for members of the Academy staff and support personnel and their families, complete with elementary schools and provision for future secondary schools.

3. **Airfield**—including an 8800′ x 200′ runway; hangars; maintenance facilities; etc. An adjacent Supply and Base Services Area will serve the entire Academy.

4. **Community Center** for the residential areas, with shops, stores, and recreational facilities. Also included in this group are quarters for unmarried support personnel, who may work in either the academic area or at the airfield.

Five Ridges

The disposition of these elements follows closely the conditions of the extraordinary site, with the five ridges (and four valleys) of the western portion, and the flatter land to the east. The *Airfield* and its attendant facilities are placed on the relatively level land in the southeastern corner of the area. Between the mesas, the two southern-most valleys are assigned to contain the *Housing Neighborhoods;* on the ridge between is the *Community Center* and accommodations for unmarried personnel. As the site plan shows, these fall just about midway between the *Airfield* and the *Cadet Area,* equally accessible from both.

Crowning all of the areas and located on the most eminent of the land promontories—second ridge from the top—is the *Cadet Area,* to be built on several quite level areas, of varying size, that step up the escarpment. At the lowest level, toward the east, is the Parade Ground. Above this, on an extensive space—currently a grazing pasture for a handsome herd of Black Angus cattle—are organized the Dining Hall; Classroom-Library building; and Cadet Quarters. Slightly higher, westward toward the towering mountains, are the more public facilities—Court of Honor; Administration Building, and Social Hall. On the most prominent spot of all, with awesome views of the mountains to the west; Cathedral Rock to the north; and down the slopes and out to the eastward stretching plains, is the Academy Chapel, containing separate places of worship for Protestants, Catholics, and Jews.

As planned, the various levels or stepbacks are joined by masonry ramps. Little has been definitely decided as to structural systems or building materials to be employed. But mention was made of steel and glass, aluminum, reinforced concrete, marble, and stone. Almost certainly there will be considerable use of the reddish native stone, and one person who should know indicated that some sort of prefabricated wall panel system would be widely employed. Owings suggested that the Chapel might be steel

framed, with marble surfaces, and stained glass in both the roof segments and side bays.

Plan Proposals

Detailed plans are likewise undetermined at this juncture; but a few of the unusual plan proposals might be of interest.

In the Cadet Quarters building, for example, the structure is so placed on a sloping grade that there are two floors of double rooms above the entrance level, and two floors below. Thus, though the building has five levels, no Cadet need climb more than two flights of stairs. And the entrance level itself will be a totally open sheltered pavilion, except for day rooms for each class. This open floor provides an undercover assembly area for use in inclement weather as well as a vista from the campus through to the playing fields to the north.

As presently schemed, rooms in the Classroom building will be arranged back to back and windowless, with bordering access corridors, perhaps glazed; perhaps left open.

The basketball arena is likewise designed as an open-and-shut scheme, with the arena itself, like a large round bowl, centered within a glass-enclosed rectangular structure.

An element of the total scheme that received most painstaking study was the road circulation. There will be two major entrances to the grounds from the main highway on the east. And a perimeter road will allow the public to tour the Academy and see all major units, without the necessity of invading them. Similarly, within the housing neighborhoods, roadways will lead around the main clusters of houses. In all areas, if one has actual business within, secondary roads penetrate the various groups. At the Administration Building, at the west end of the Academic group, the public may pass through to the Court of Honor, between the Chapel and Social Hall, and from this great, elevated platform, look down over the entire group of Academic buildings and to the distant view beyond.

Toward the eastern side of the property, but west of the Airfield group, two major railroad lines—the Atchison, Topeka & Santa Fe, and the Denver, Rio Grande & Western—traverse the property. By moving a portion of track of the former, a single railroad station will serve both lines, and the existing tracks will provide a siding to serve the Supply and Base Services Area.

Design Team

Preliminary talks at the Fine Arts Center explaining the purposes behind this great project and the principles on which its design are based were given by Secretary of the Air Force Harold E. Talbott; Nathaniel Owings of Skidmore, Owings & Merrill; and Lieutenant General Hubert R. Harmon, Superintendent of the Air Force Academy, which will occupy an interim home at Lowry Air Force Base in Denver. First construction work at Colorado Springs—grading, road building, stream diversion, etc.—will commence this fall; construction of buildings is scheduled to start about a year from now. And it is hoped that the Academy can move here from Denver in the fall of 1957.

Special credit should go to three architects who serve as Architectural Consultants to Secretary Talbott—Pietro Belluschi, Dean of the MIT School of Architecture and Planning; Eero Saarinen, Bloomfield Hills, Michigan; and Welton Becket, of Los Angeles, California. Associated with Skidmore, Owings & Merrill are Robert & Company Associates, Atlanta, Georgia; Moran, Proctor, Mueser & Rutledge, New York; and Syska & Hennessy, also of New York, who are advising on utilities, soils and foundations, and electrical and mechanical work, respectively. Nor could the project go forward without the contributions of the U.S. Air Force Construction Officials, and the Air Force Construction Agency, one member of which, Architect Ellery Husted, who serves as Special Consultant to the Air Force on sites and master plans of air bases, developed the original master plan for the Air Academy.

Seen from the north (top, below) *the giant staircase effect of the scheme for the Cadet Area is strikingly apparent, with the interdenominational Chapel dominating the whole—symbolically as well as physically.*

Looking southwest across the Community Center (bottom) *located on one of the five main ridges, a group of the housing neighborhoods stands out in the valley beyond.*

4

5

U.S. Air Force: Photos by Ezra Stoller

William Hurd Hillyer

$ details

It augurs well for construction of all kinds, with Summer as clerk of the works, economic blueprints still expanding, and industrial production at record heights. Nevertheless bankers and financial men are beginning to wonder where the money is coming from to sustain the present building rate, particularly residential.

These gentlemen see difficulties beyond the 1-⅓ million units fixed for 1955 by the Home Loan Bank Board chairman as a limit beyond which "shortage of funds" might develop. Irrespective of financing, the Housing Administrator estimates that identical total as the year's probable accomplishment, with a greater number possible, now that the annual rate has passed 1.4 million units.

Returning to the money side, tighter interest is already reflected in "fringe value" areas of the VA mortgage market. Mechanics of the rise are simple, despite the 4-½% legal rate. The borrower gets less than the full amount of his loan—say $9,500 on a $10,000 face value—and the lender adds the difference to the interest yield on his money.

If this discounting habit spreads throughout the home-financing domain it could act as a curb upon residential construction. In expert opinion, FHA and VA loan patterns are becoming unrealistic, both as to terms and interest. Such patterns are labeled "ultraliberal" and their use is deemed "injudicious" by top executives of U.S. Savings & Loan League. They deplore the "no equity" ownership of so many houses and warn of "serious consequences" unless a sounder basis is achieved. Big lenders are more selective and some are turning to Government bonds for the time being. Rumors of a possible reduction in the specified interest rates on FHA-VA mortgages further befog the lending atmosphere.

Conversely, there has never been a time when more families were planning to buy new homes with better prospects of being able to pay for them, Federal Reserve research indicates. Official survey shows 10% of the spending population as planning to build or buy, 23% to make improvements, during the twelvemonth-record-cracking percentages. These planners feel better off financially than they did last year and 38% are earning more money.

Home improvement, with its large potential above noted, will be of widening interest to architects during the second half of the year. These undertakings have a value beyond their relative size, bankers believe, because the demand for residential improvement loans comes mainly from the median income brackets that provide "basic" economic stability. Banks have had "excellent experience" with modernization loans and are carrying some $1.3 billion of such paper in their portfolios. They are inclined toward home improvement loans, even without Government aid or guaranty. Home improvement, despite its multitude of small units, will increasingly provide a worthwhile challenge to architectural ingenuity "It has indeed become big business," acknowledges the 84-year old New England *Banker & Tradesman.*

In the luxury market, apartments at $4000 a year and up have no difficulty in finding tenants and investors countrywide. Seventeen key cities checked by *The Wall Street Journal* showed greater interest and activity in high-priced quarters than at any time for 30 years. This trend will likely gather strength during '55 because business sees a 5% sales increase. Besides fattening the rent payers' purses, such hefty increment will nourish all kinds of nonpublic buildings. To the front will be store construction, especially new shopping centers, which with store modernization account for a record $8.8 billions already planned—the anticipated annual sales being $40 billions. When these expectations are realized more and perhaps even larger shopping centers will be brought to the architect's board.

Over-all retail sales volume for 1955 is plotted at $175 billions by National Retail Dry Goods Association's executive vice-president, out of an estimated $370-billions production aggregate. New centers and facilities to handle this huge volume should further augment architectural possibilities.

The months ahead will see homebuilding and general business reacting favorably upon each other. This is in compliance with the economic law that a multitude of relatively small units impart and absorb stability, to and from other categories. Home construction creates a demand for the goods and services of more than 50 major industries embracing 20% of the nation's workers. Employment conditions are bettered thereby, thus bringing more homebuilders into view.

Factually, out-of-work claims are dropping week by week, averaging some 30% below comparable 1954 figures. The Labor Department at outset of current quarter reported unemployment claims as touching a year-and-a-half low. Other heartening signs, bearing indirectly upon the architect's well-being:

Checks cleared through banks in 26 key cities are averaging 6% ahead of last year;

Corporation profits are picking up and Wall Street observers see a market increase for the current quarter;

Steel mills are operating at around 97% of capacity, a near-record;

American Bankers Association has devised ways for mortgage lending aid to small "country" banks by their large city correspondents;

New factory-and-equipment outlay should touch $28 billions and surpass that of last year, say Securities & Exchange Commission and U.S. Commerce Department;

Consumer credit and FHA Title I collections show marked improvement over '55, with average delinquencies ranging from 1% to 2%, banking survey reveals.

Harmonizing pertinent factors — always minus international disaster—the resultant scene discloses more light than shade. There will be no "crash" this fall, nor, in any likelihood, this year. Private construction will taper off, but not much more than seasonally. The benign circle of earnings and earning power will tend to hold in check both inflation and recession—at least through 1955.

urban university redevelopment

Wayne University: Detroit, Michigan

Suren Pilafian, Architect

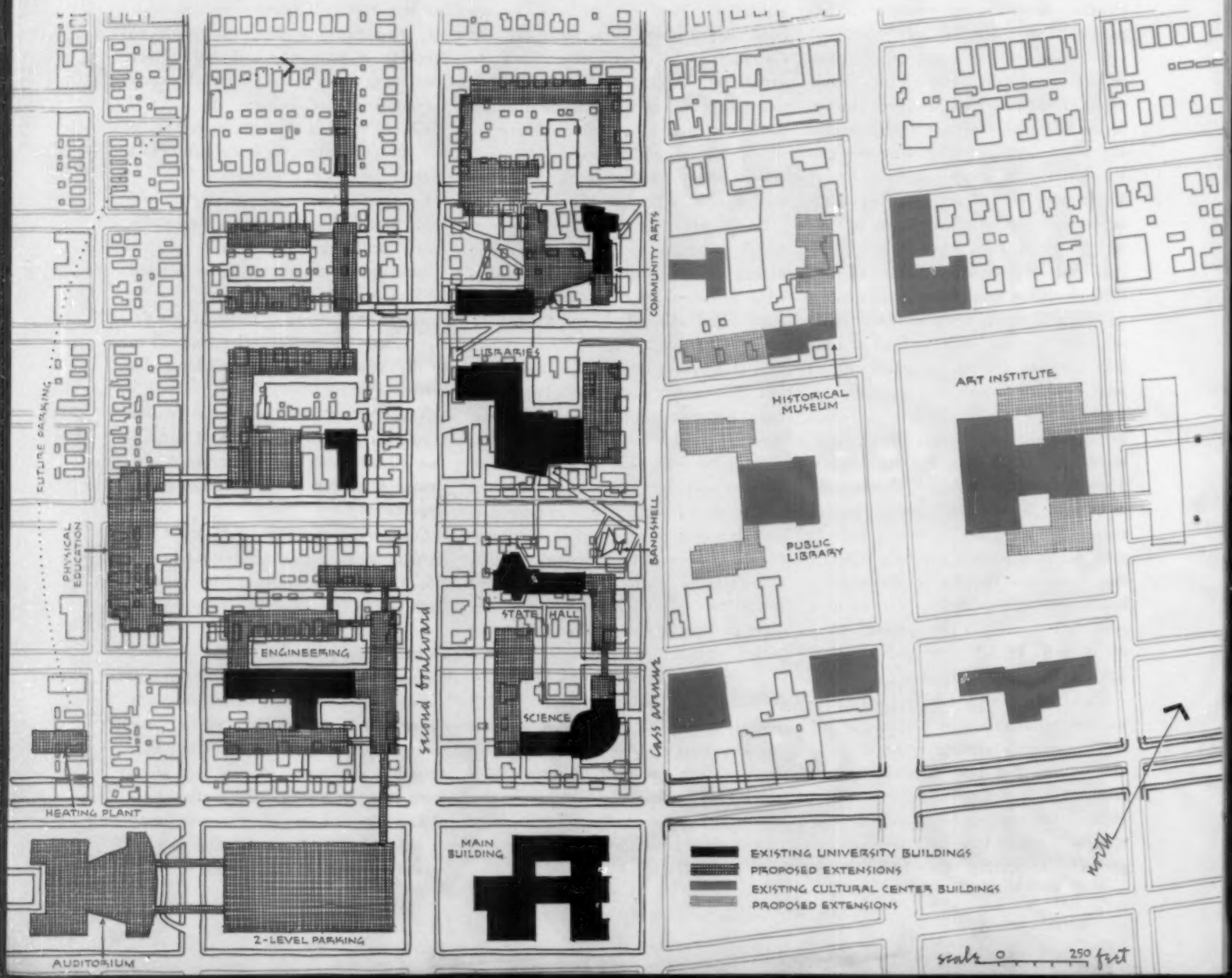
An almost incredible transformation is taking place a few blocks north of downtown Detroit, in the area adjacent to the city's long-established cultural center, which includes Detroit Public Library, Institute of Arts, Rackham Foundation, International Institute (*see August 1954 P/A, page 98*), and Historical Museum.

For here the new campus of Wayne University is arising, literally carved out of 85 acres that had previously been almost wholly occupied by houses in rows along a gridiron street pattern (*see color background behind the campus drawing*). As Suren Pilafian, chief architect of the Wayne buildings shown in this issue, puts it: "We haven't designed a single building that hasn't required at all stages consideration of how it could be built in pieces, or added to, or connected with other units."

This all started back in 1942 when the Administrators of Wayne and the governing Detroit Board of Education, realizing the University's enormous growth and need for expansion, determined to develop the new campus in an orderly, integrated manner. To that end, a design competition was held (the campus proposal at that time involved only 15 acres), and Pilafian won the award. It was soon decided that the designated three-block area was inadequate for the needed buildings, and the larger area was allocated.

The State of Michigan appropriated $3 millions for two new buildings for the campus—a General Science Building, for which Ralph Calder was architect, and a classroom building (*see page 100*), for which Pilafian received the commission.

Next buildings were the first unit of the College of Engineering (Pilafian & Montana, Architects), built with money raised through taxation imposed by the



State Hall, a classroom building (right) *was the first of Pilafian's completed buildings on the campus. It is shown in detail on subsequent pages.*

The five-libraries-in-one, of which the Kresge Science Library is a vital unit (center) *is also discussed fully on following spreads.*

First unit of the College of Engineering (bottom), *is about one fourth of the eventual scheme.*

Photos (except as noted) : Bill Hedrich, Hedrich-Blessing

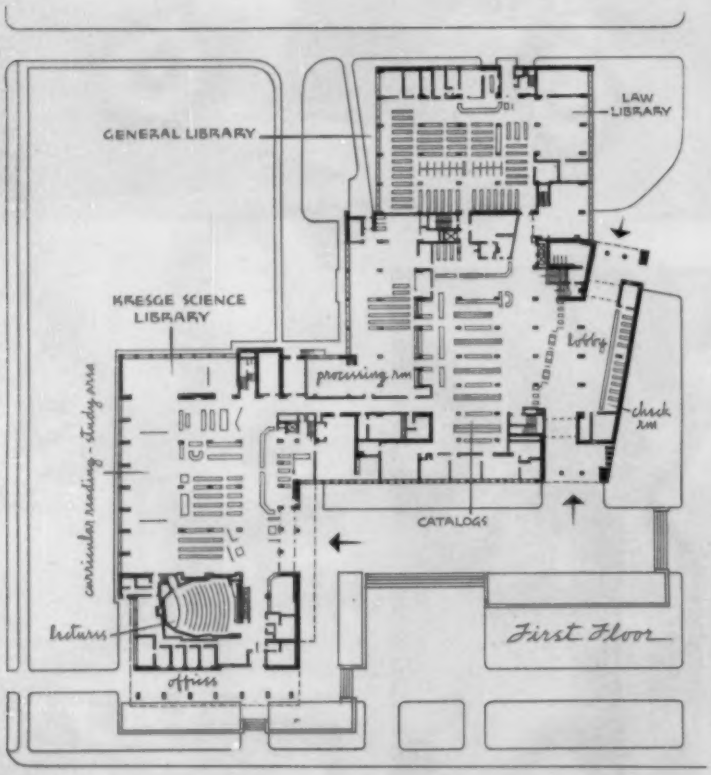
Elmer L. Astleford

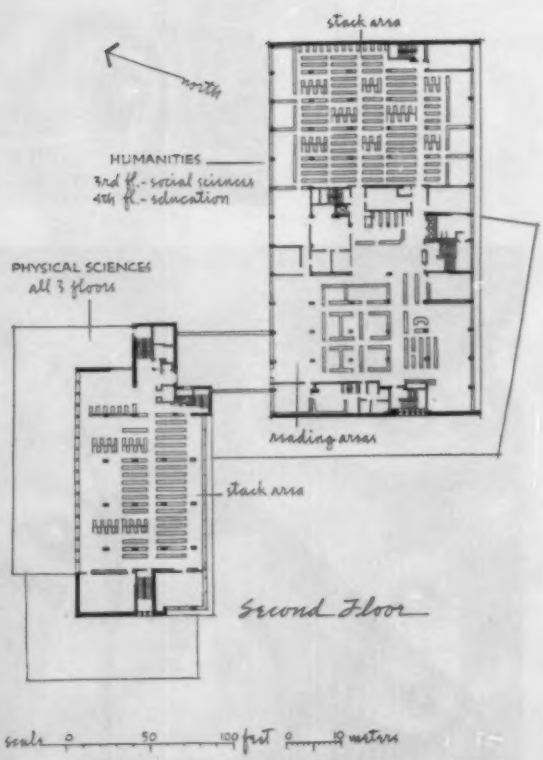
Board of Education; the General Library (similarly financed), with its important Kresge Science Library wing built with money provided by the Kresge Foundation; and the Community Arts Building (partly constructed), financed with money obtained both through taxation and from gifts to the City made by interested citizens.

The close relation between the emerging new campus and the developing cultural center should be noted on the composite drawing. The Detroit City Plan Commission (at one time assisted by Buford L. Pickens, and more recently by Pilafian's office) has been fully aware of the inter-relationship. Additions to the Library have been designed by Cass Gilbert and Francis Keally, of New York, while Pilafian is working on the remodeling and additions to the Institute of Arts.

Although Wayne had long been located in this general area—in old buildings and some of the existing houses—many originally argued that it should move elsewhere. But the advantage of accessibility to the existing near-by facilities outweighed the disadvantages of higher land costs, and the fact that the area was built-up.

libraries: Wayne University





A most painstaking program was developed for the architect; stressing "wisdom" as the end that the libraries should serve, and accumulated knowledge (the books) as a primary means to that end. Hence optimum access, rather than storage of the books, was the major design consideration. It was further predetermined that the libraries should be organized on a subject-division basis into a series of sublibraries, rather than as one huge storehouse. Hence, the Wayne group consists of five, practically independent libraries under one roof—in the General Library (the forward portion of the group); the Law Library (first floor); Humanities (second floor); Social Sciences (third floor); and Education (fourth floor). In the attached wing (the Kresge Science Library) are housed the science and technology collections. Common general services co-ordinate all units. All libraries follow the open-stack scheme, in line with the program requirement of maximum individual access to the books. Carrels (mainly for graduate students) are among the stacks, while shelves of the books more regularly in demand (mainly for undergraduates) are arranged in the reading areas. A modular structural scheme and movable stacks and furniture provide maximum flexibility for possible future rearrangement.

The first-floor reading and study area of the Kresge Science Library (above) *occurs in back of the open stacks bordering the entrance lobby* (bottom acrosspage).

At the exit from the General Library (left) *checking of books is handled at special desks; one-way turnstiles serve entering students. Book-return slots are provided outside the building, for use after hours.*

Each of the five major sub-divisions of the library includes a central control core, with circulation desk, reference desk, catalog, and book conveyor and pneumatic-tube connection for quick handling of books to any area of the building.

Frame of the General Library is concrete, while steel frames the Kresge wing. Exterior materials are beige brick, with aluminum sash, greenstone spandrels, a pink stone trim and—at the entrances—columns of Swedish black granite.

Most interior walls are of cinder block, plastered where acoustical considerations required. Flooring, in general, is of asphalt tile, though terrazzo occurs on stairs and in lobbies and toilets. Most ceiling surfaces are acoustical tile, but in main reading areas flush-mounted plastic panels occur, with fluorescent lamps above. Other lighting is chiefly semi-indirect fluorescent, while bare cold-cathode tubes are used in stack areas.

The General Library is air conditioned, with most windows sealed; in peripheral areas conditioning units operating at high velocities are used. In the Kresge wing, convectors along outside walls and windows heat the building, and ventilation is handled by a duct system.

Capacity of the present libraries is approximately 2200 readers and 800,000 volumes. The basement contains a photographic suite, receiving-unpacking room, book-repair room, archives, vault, general storage spaces, and mechanical equipment.

Collaborating with Pilafian on the design of the Libraries were Frank Montana, Associate Architect; Smith, Hinchman & Grylls, Inc., (Consulting Architects for the Kresge Science Library); Paul Calkins, Civil Engineer; and Bolt, Beranek & Newman, Inc., Acoustical Consultants. Mechanical and Electrical Engineers for the General Library were Hyde & Bobbio, Inc.; for the Kresge Science wing, Snyder & McLean. Howard Sharp was Lighting Consultant for the Kresge unit. C. H. Reisdorf & Sons was General Contractor for the entire job.

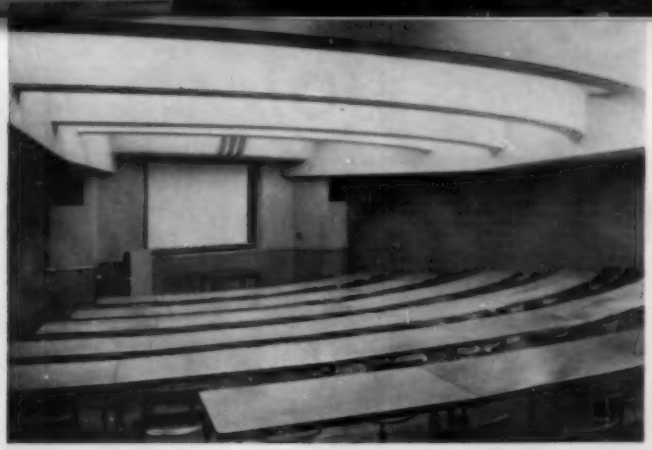
State Hall: Wayne University

This classroom building, which is less than half its eventual size, was—like the other campus buildings—built in the midst of existing houses. It was completed in 1948, but only recently have enough of the old houses been taken down so that it has been possible to take photographs. The second floor is similar to the third, and the building contains a total of fifteen classrooms each accommodating 32 students; ten, seating about 40; three lecture rooms with room for 80 each; and a large lecture room for 250. An unusual feature is the provision of study lounges, which are used by students who live too far from the campus to go home to study between classes. With completion of the addition at the east end of the building (*see campus plan*), one of the semienclosed landscaped courts schemed for the campus will be formed.

The building is of concrete construction, with brick exterior walls, cinder block or glazed tile walls within. Sash are fixed steel, with directional glass block above (on the south front). Flooring is asphalt tile. The building is steam heated from a central power plant. Lighting is cold cathode.

Snyder & McLean were the Mechanical and Electrical Engineers for the job; Ray W. Covey, Civil Engineer; and Esslinger Misch Company, General Contractor.

Photos: Elmer L. Astleford



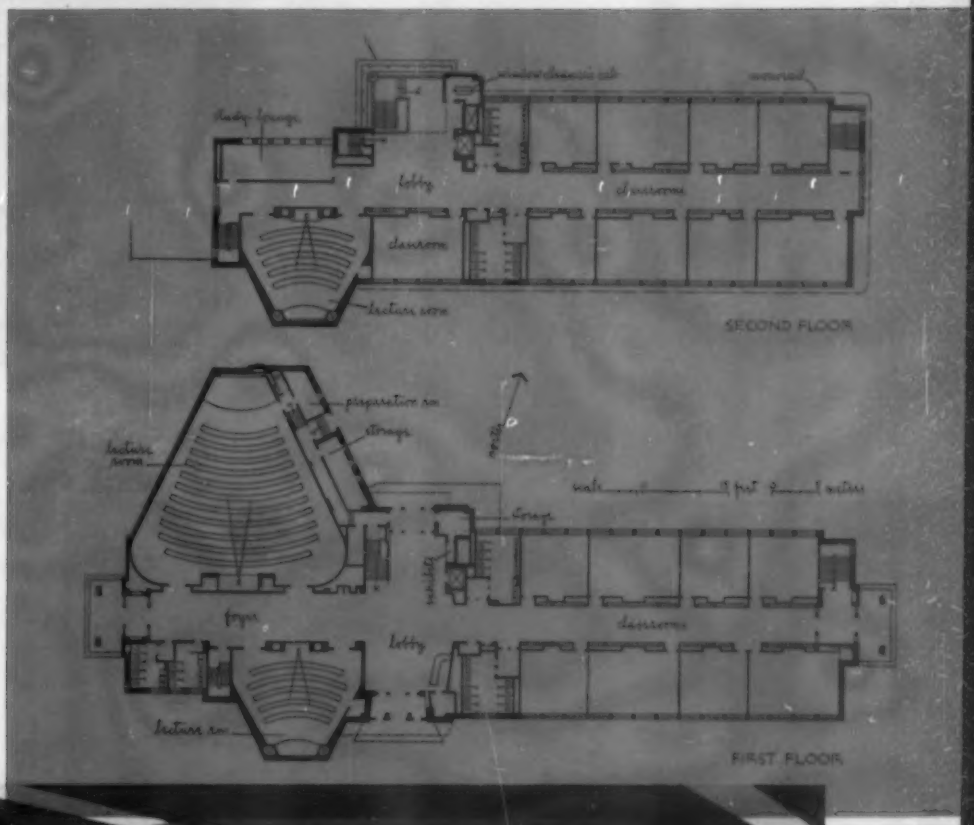

lobby
classrooms
classroom
lecture room
SECOND FLOOR
preparation room
storage
lecture room
walk
stage
foyer
classrooms
lobby
lecture room
FIRST FLOOR

Photo: Anne Marquis Studio

COCKE

YORK

BOWMAN

Photo: Bob Teege

the architect

Harlingen, Texas: Founded in 1904 by Lon C. Hill (population, 340; pistols, 341); 1940 population, 13,306. Today's estimated population, 30,000 with 45,000 to 50,000 in the metropolitan area.

Photos: Purnell

The further one dips into the State of Texas, the more one finds the extraordinary. In studying the firm of Cocke, Bowman & York, of Harlingen—in the Lower Rio Grande Valley just 35 miles north of Brownsville and the Mexican Border—we are dipping just about as far south as one can go in that fabulous State. And, as might be expected, the resources of the area and the growth of the city are both phenomenal. But most extraordinary of all, from our point of view, is that Cocke, Bowman & York have been able to contribute such remarkably refined architecture (*subsequent pages*) to a region that is so hustling and youthful.

Actually, the fact that Harlingen *is* a young city was a prime reason why Bartlett Cocke, Walter C. Bowman, and John G. York decided to practice there. As Bowman puts it: "The advantages of this area lie largely in the fact that it is new territory . . . that it is progressive and not bound by a long period of tradition." All three partners comment that there is some disadvantage in comparative geographic remoteness; but, as Harlingen is the fast-growing center of the Lower Valley, this is slight and will diminish as the region continues to prosper. Now, oil and cotton and the tourist trade vie with the

and his community

Cocke, Bowman & York: Harlingen, Texas

well-known agricultural and food-packing industries of the region. As someone scribbled on a piece of Chamber of Commerce literature that was sent to us: "It is now a landscape of beautiful citrus orchards . . . afraid oil is going to ruin our handsome farms; but, you know, oil can sure make a cornfield pay off!"

Cocke, serving chiefly as business adviser for the firm, received his B.S. in Architecture from the University of Texas. Subsequently he attended MIT for two years as a special student. After working in several offices and entering a partnership with Marvin Eickenroht, he conducted his own practice in San Antonio. Bowman came to work with the firm in 1939, and in 1945 the firm of Cocke & Bowman was established in Harlingen.

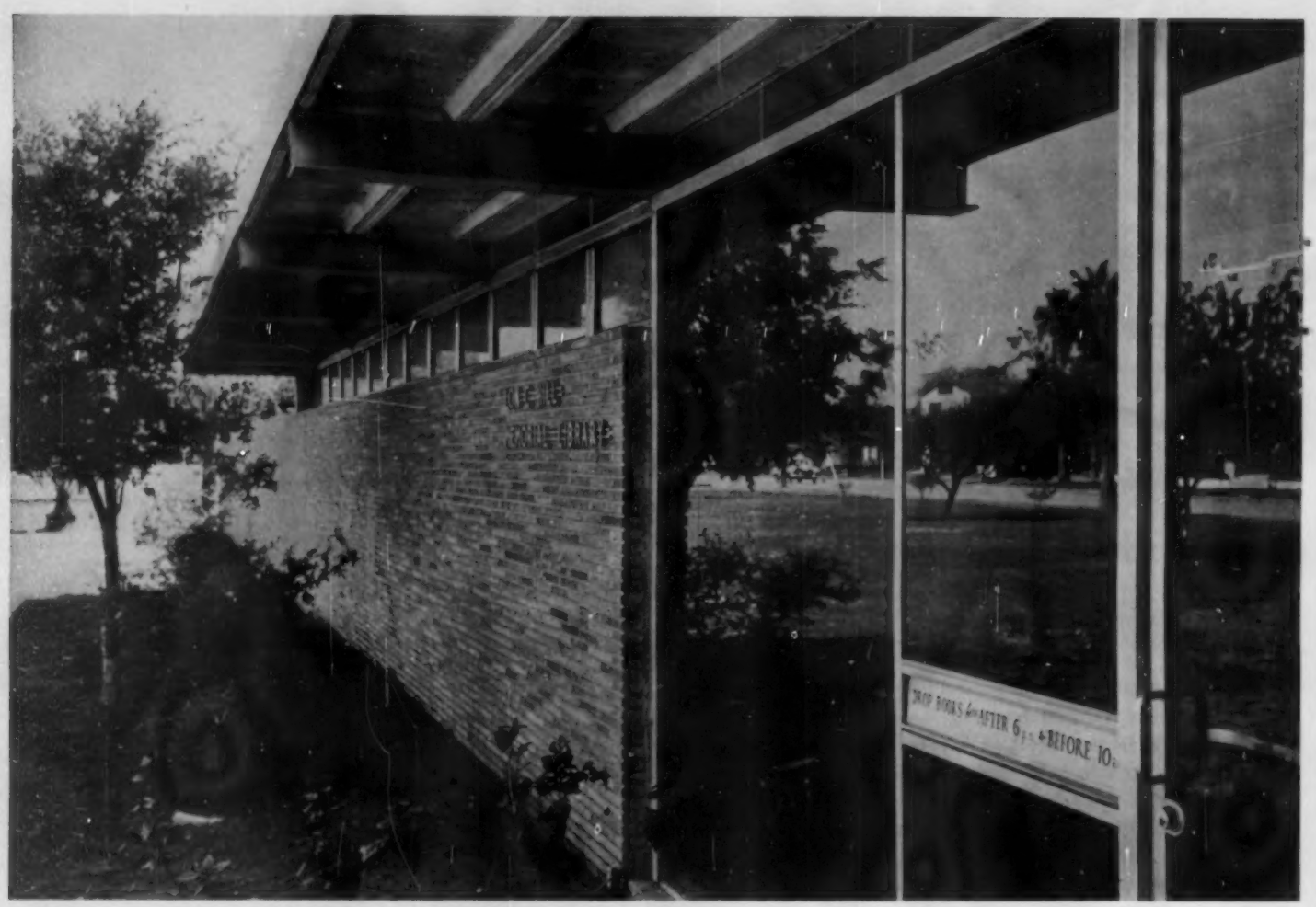
Bowman, whose chief responsibilities are in the engineering end of the firm's work, was born in Waterproof, Louisiana. He received his B.S. in Engineering from Louisiana Polytechnic Institute, studied for a year at Tulane, and was graduated from the University of Texas with a Bachelor of Architecture degree. After working with a landscape architect, he joined the office of Bartlett Cocke, in San Antonio, and ever since has been associated with Cocke in some capacity, becoming his partner in 1945. During the war years, he and Cocke worked with the engineering firm of W. E. Simpson Co., on jobs for the U. S. Engineers.

York's training included two years at North Texas Agricultural College and five years at the University of Texas, where he was graduated with the degree of B.S. in Architecture. York's main function is design. After working with various architects in Austin, the State Parks Board, and the National Youth Administration (Architectural Department), he was with The Austin Company in their Houston office for a time, and, later, with the U. S. Air Force. Following this tour of duty, he worked in the offices of G. Meredith Musick and of James Roger Musick in Denver for two years, during which he also taught design at the University of Denver. At the end of this period, he migrated to Harlingen where he conducted his own practice, until joining Cocke & Bowman as a partner, in 1949.

York tells us that with Cocke, as business adviser; Bowman, as engineer; and himself, as designer, "we are able to carry a job through completely with close coordination in design, materials, structure, and mechanics." During the time the work shown in this issue was produced, they were assisted by a secretary and five draftsmen—two of the men holding Texas architectural licenses. "On large projects," York reports, "once the program was set and preliminary talks terminated, the job was processed with very little consultation among the partners. However, during this phase, the engineer and designer worked in close harmony and, in many cases, engineering improbabilities dictated the design trend."

Possibly York sums up the firm's architectural goals most acutely when he comments: "My design philosophy has, from school days, stemmed from the idea of expressing structure, simplifying details, omitting unessentials, and striving for economy with stability by avoiding the use of too much 'architecture.' I am not at all in accord with monumentality of stylized period work for any reason whatsoever. . . . Thus our society need not be burdened with heavy, ornate buildings which it cannot afford to destroy."

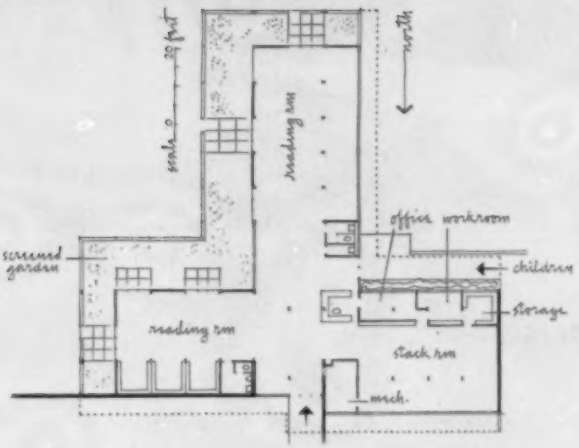
Whether or not this is a full statement of the case, the firm's completed work exemplifies the wisdom of this fundamental approach—and clearly demonstrates their ever-present concern with structural expression.

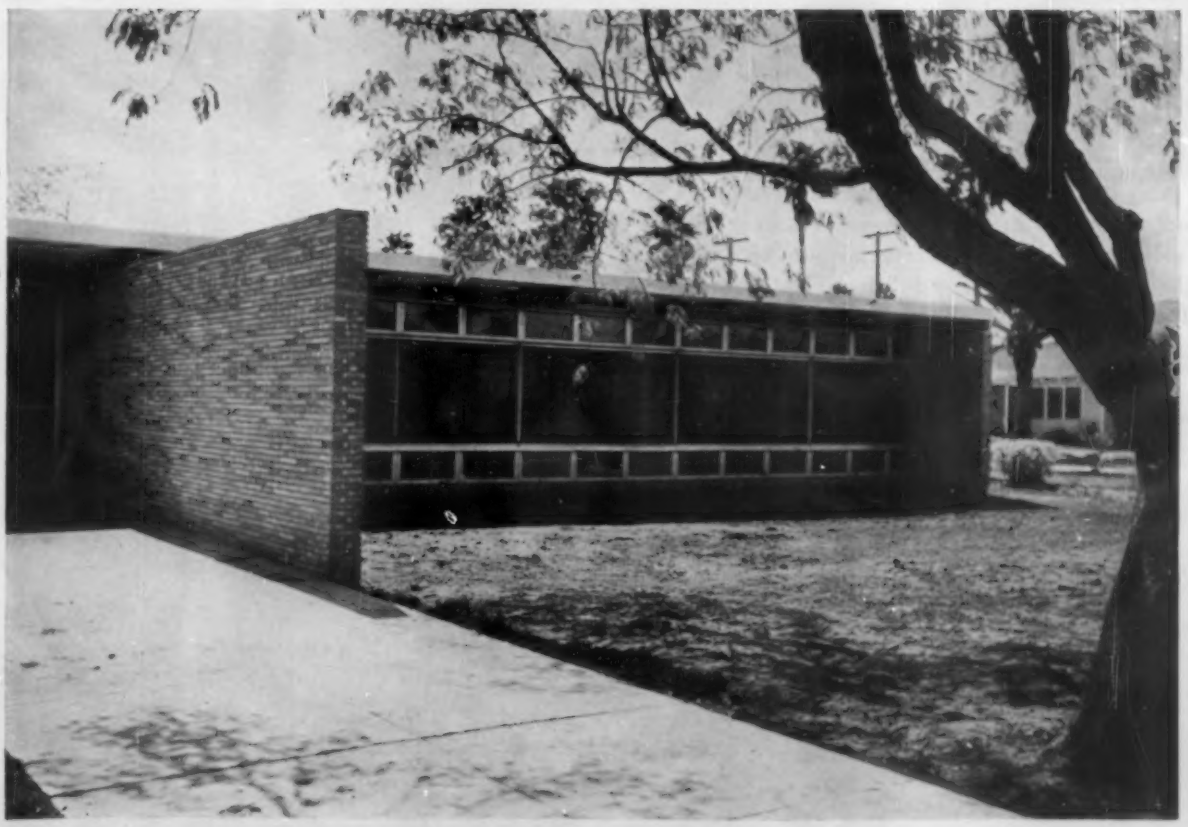


library

These fine new library facilities have proved invaluable to the younger pupils of nearby schools who have their own special entrance for attending planned study and reading periods. Local residents and winter tourists find the building within easy reach from the Harlingen business district. The building is very well liked for its open and light quality, made possible by the large glass areas opening onto Travis Park and the planted and screened terraces opening off the reading rooms along the south and east walls. Designed in "T" form, the library allows for expansion in three directions. The structural system—steel wide-flange columns and beams left exposed, concrete decking insulated on top with rigid insulation—will permit future extensions without structural difficulties. This system also allows an interior which may be rearranged if future changes in library technique should occur. The General Contractor for the library was W. B. Uhlhorn.

Children from nearby schools enter library through special door (left) *on west side of building. Other entrance* (below *and* across page) *serves the general public. North wall of stack room* (bottom) *uses sandblasted corrugated glass with clear glass panels above and below. Generally, large glass areas have been oriented south and east; masonry walls, north and west. The building is heated and air conditioned year-round through wood plenums suspended below the steel beams. Plenums are also used for indirect light shelves. All steel has been painted a deep blue to contrast with the red-orange brick and the white ceilings.* Photos: Ulric Meisel—Dallas



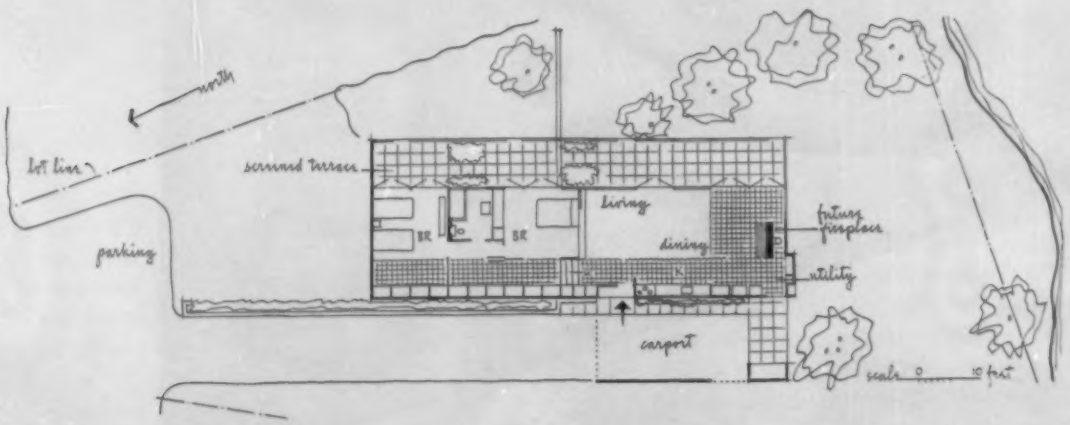


the architect and his community: Cocke, Bowman & York

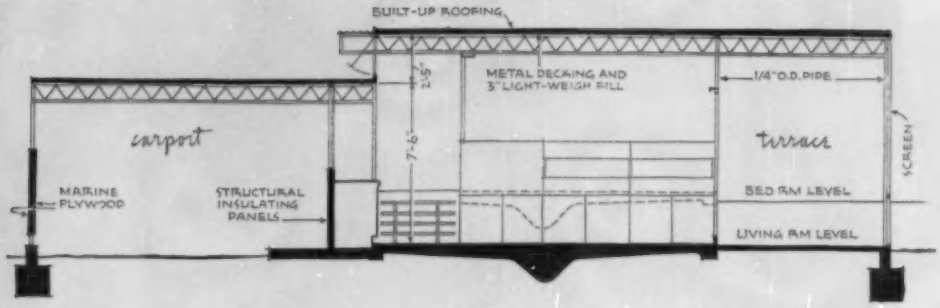
house

"Designed house as open as possible," writes John G. York, who was the architect for his own house. "Since we entertain informally, the living area was left quite free of partitions; bamboo screen divides kitchen, living, and dining spaces. The house has been very satisfactory for our family, although small children are a bit hard on the open living idea from the standpoint of tidiness." A lot with narrow street frontage, widening toward the back, determined the placement and shape of the house. The present plan will later be expanded to accommodate maid's quarters, an additional bedroom with bath, and a fireplace. "The structural system," York continues, "consists of 1-¼" pipe columns detailed to fit neatly into bar joists made of 1" pipe and reinforcing rods. This detail enables the glass to travel full height into ½" x ½" aluminum channels, set flush with metal decking. Doors were hung directly to pipe columns, by shaping and welding standard butt hinges around the columns. Weatherproofing was accomplished by round sponge-rubber weather stripping, similar to that used in automobile manufacture. All exterior walls (except those of glass) were built of 1-9/16" structural insulating panels, attached top and bottom only, joined vertically with redwood spline strips and cover pieces."

Others contributing to the success of this house were: Walter C. Bowman, Engineer; George Pletcher, Landscape Architect; Today's Living, interior furnishings; W. B. Uhlhorn, General Contractor.



In contrast to the simple lines of the structure, the surrounding trees create a soft and ever-changing pattern of light and shadow. Entire southeast side of the house features an 8-ft roof overhang edged with screens for protection from insects. Night photo (view into living room at left and screened terrace at right) illustrates York's observation that "one gets the feeling of the absence of construction."

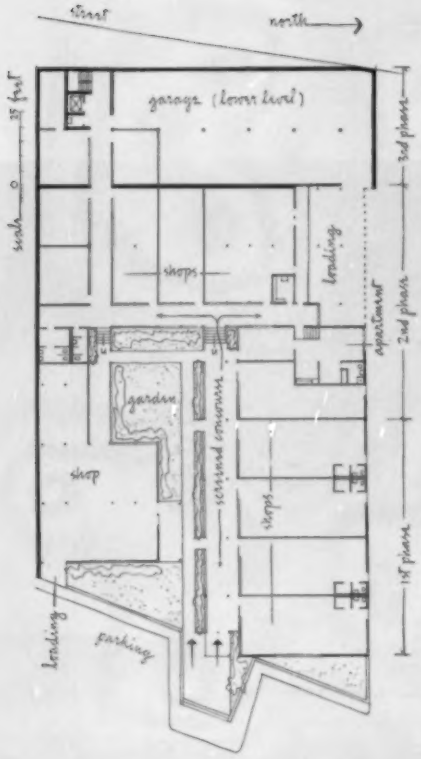


Unique foundation (above) *was designed by York and engineered by partner Bowman to produce a smooth surface against which soil could freely move both vertically and laterally. This design, afterwards used for schools and other projects in the Harlington area, reduces the cracks at juncture of beam and slab commonly found in ordinary floating-slab foundations.*

Brick paving (acrosspage) *extends along the entire northwest side of the building. Living room and bedrooms have cork floors. A bamboo screen separates kitchen from living-dining room. This area may be arranged to appear even more open and spacious by sliding aside folding screen partitioning off adjacent bedroom* (above), *located five steps above living room level.*

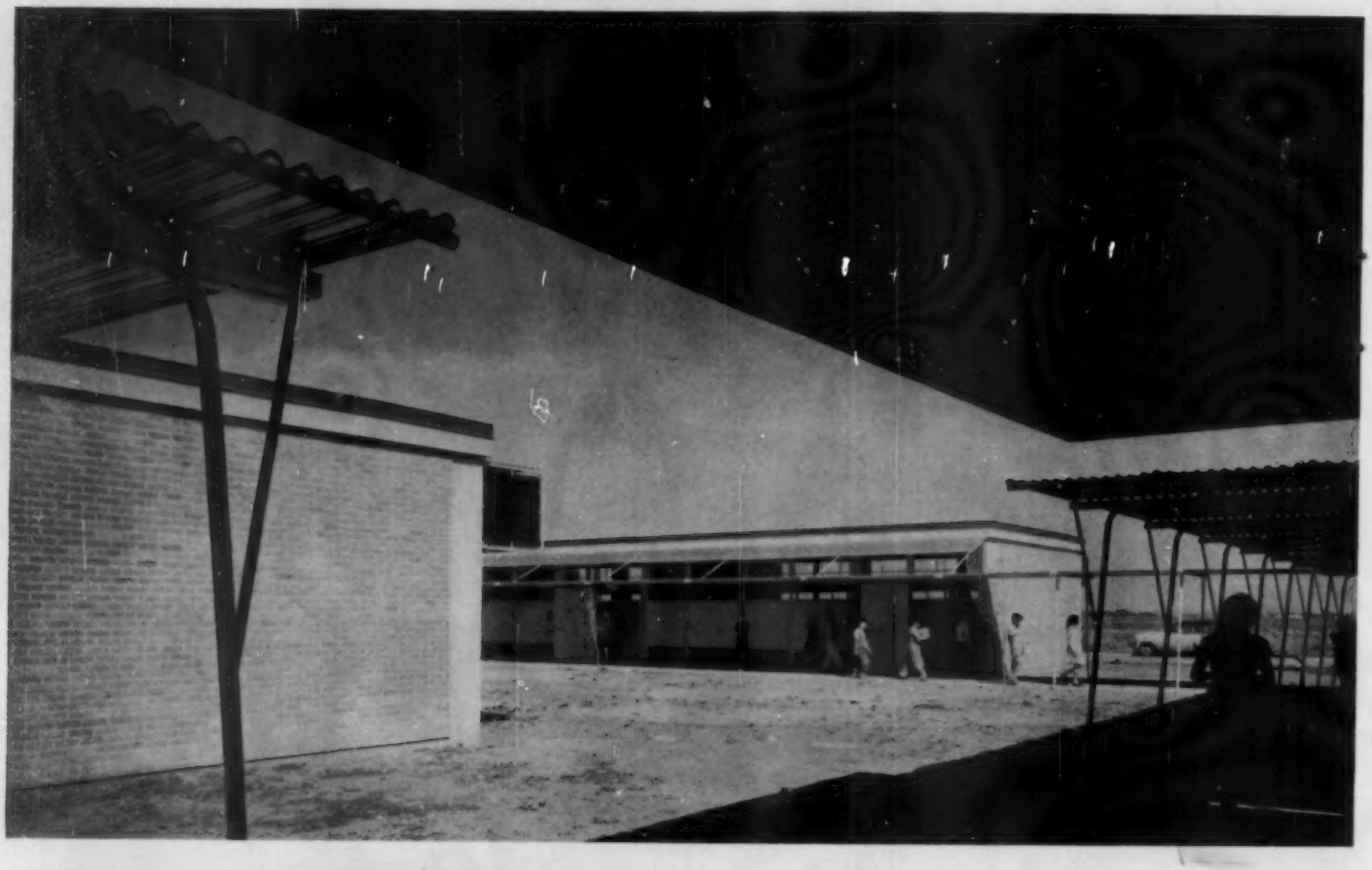
shopping center

Another facet of the firm's practice is revealed in this ingeniously planned shopping center for Corpus Christi, Texas. The clients wished to develop a downtown site not only for immediate revenue but also with an eye to the future growth of the city and the resulting increase of land values. Anticipating this trend the architects designed a structure completely demountable for removal to another location when the present site becomes too valuable for this operation. Excepting foundation and roof covering, all parts of the structure—1-½" I.D. pipe columns; 18" bar joists; steel decking; 1-⅛" structural insulating panels installed with redwood "T" splines—will be reusable. The first two phases, comprising small offices and shops with terrace display, have been completed. Virginia Hartman designed the interiors; Childers Engineering Service developed the air-conditioning system; O. J. Beck & Sons and Huddleston & Seaman were General Contractors.

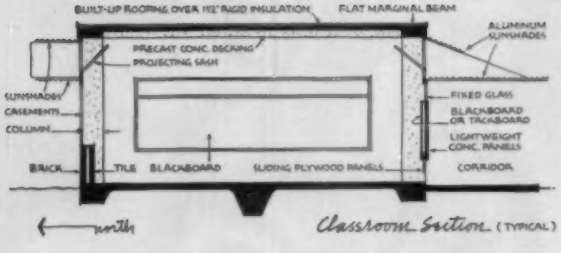


Wide, screened overhang (photo below), *a device often used by the architects, protects against insects and the hot climate, and in this case serves also as a pleasant circulation and display space. Corrugations of metal decking assist in breaking sound. Interior partitions containing flax straw were also selected for their acoustical value. Artificial lighting is by slim-line tubes mounted on porcelain brackets nesting in top of inverted channel stiffener under bar joists. The first two phases were constructed for an average sq ft cost of $7.35. Phase Three, an office or apartment building* (drawing below) *is estimated at $8.50 per sq ft. This multi-story structure will be at the highest point of the site, overlooking the shopping center and Corpus Christi Bay beyond.*

the architect and his community: Cocke, Bowman & York



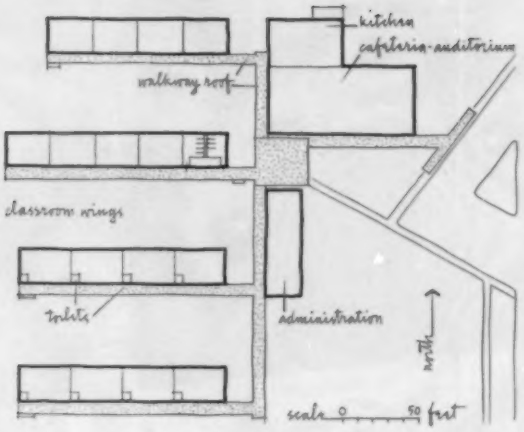
school: concrete frame

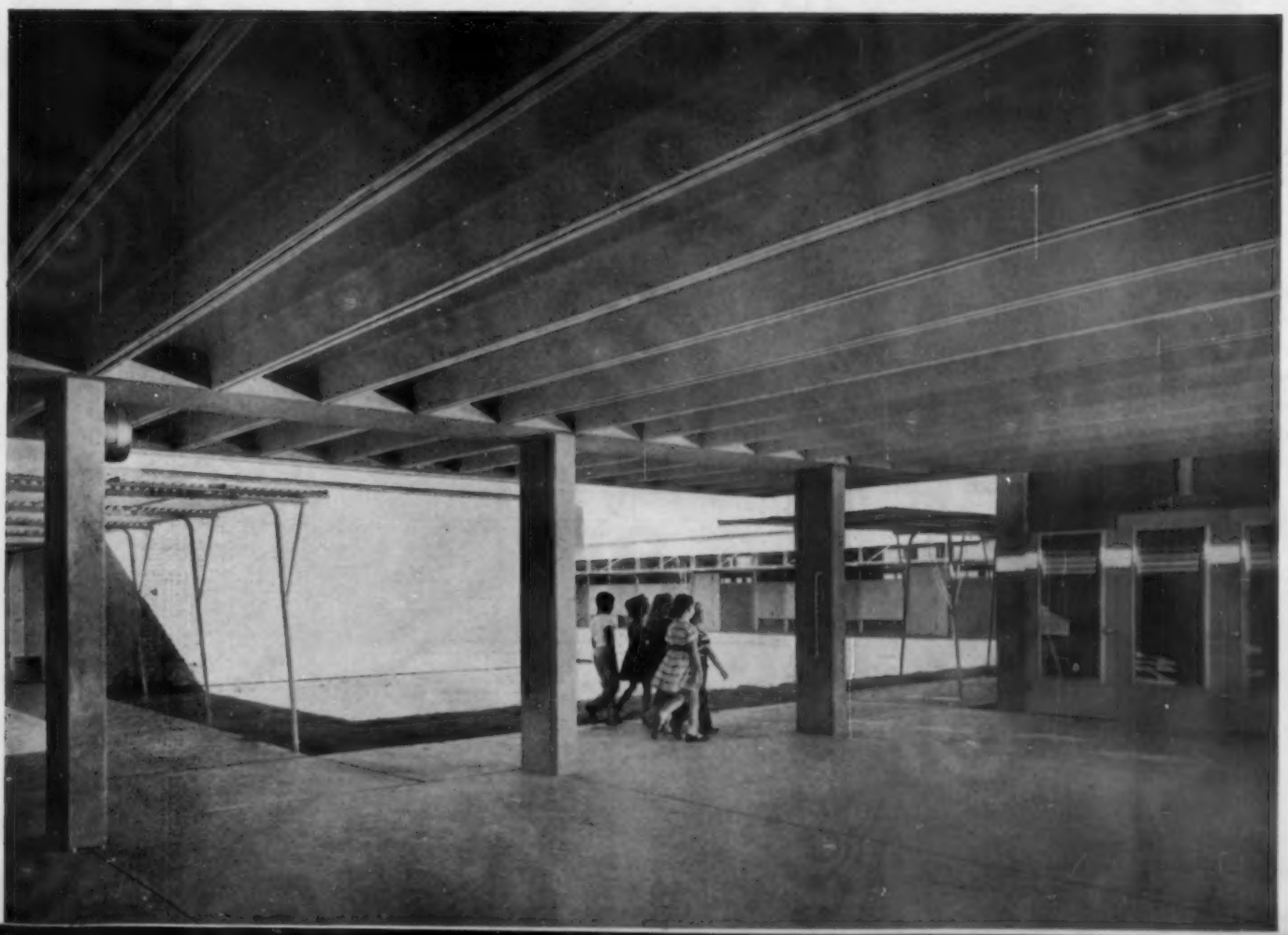


Typical of so many offices everywhere, this firm is heavily engaged in the design and construction of schools. To illustrate the wide range of solutions emanating from this office we have chosen two: 1. An elementary school in Harlingen (*above* and *acrosspage*) employing concrete; 2. An elementary school in Brownsville (*page 114*) employing steel. Though the architects do not consider one solution adequate for all requirements, they firmly believe that each school plant must have a "common denominator"—a pattern which will tie all of the parts together to form one harmonious whole.

The common denominator in the Harlingen building is the uniform span-height relationship of the concrete parts. Rectangular concrete columns occur regularly 10′ ¾″ on centers. Flat marginal beams, running longitudinally at the top of window walls, tie both columns and precast decking together. Foundations are similar to York house, described on previous pages, using an integral beam and slab on fill, with grade beams along the column lines. A fireproof building at a low unit cost was the main advantage of this structural system. Meritt & Roe was the General Contractor for this school.

Classroom walls facing north (left) *have casement and projecting-type windows, set on low cavity walls which use brick on the exterior and tile on the interior. On the south corridor side* (below) *classroom walls have sliding plywood ventilators at the floor line, lightweight concrete panels above. Narrow strips of fixed glass extend up to the corridor canopy, and projecting sash to the roof line. Exterior sunshades and canopies* (see SELECTED DETAIL, page 143) *are of .032" corrugated aluminum. Interior partitions employ 12"x12"x4" face tile. Lighting is provided by slim line strips mounted in 9" reveals in concrete decking. Free-standing, concrete canopy* (bottom) *was used to cover the point of juncture between the administration, auditorium-cafeteria combination, and classrooms.*

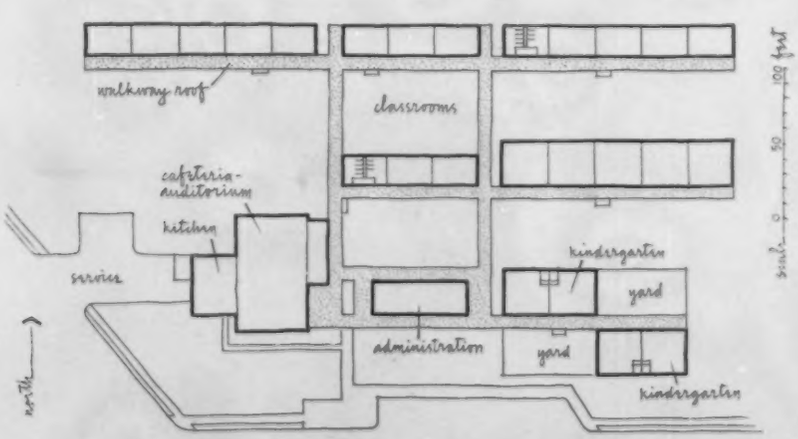




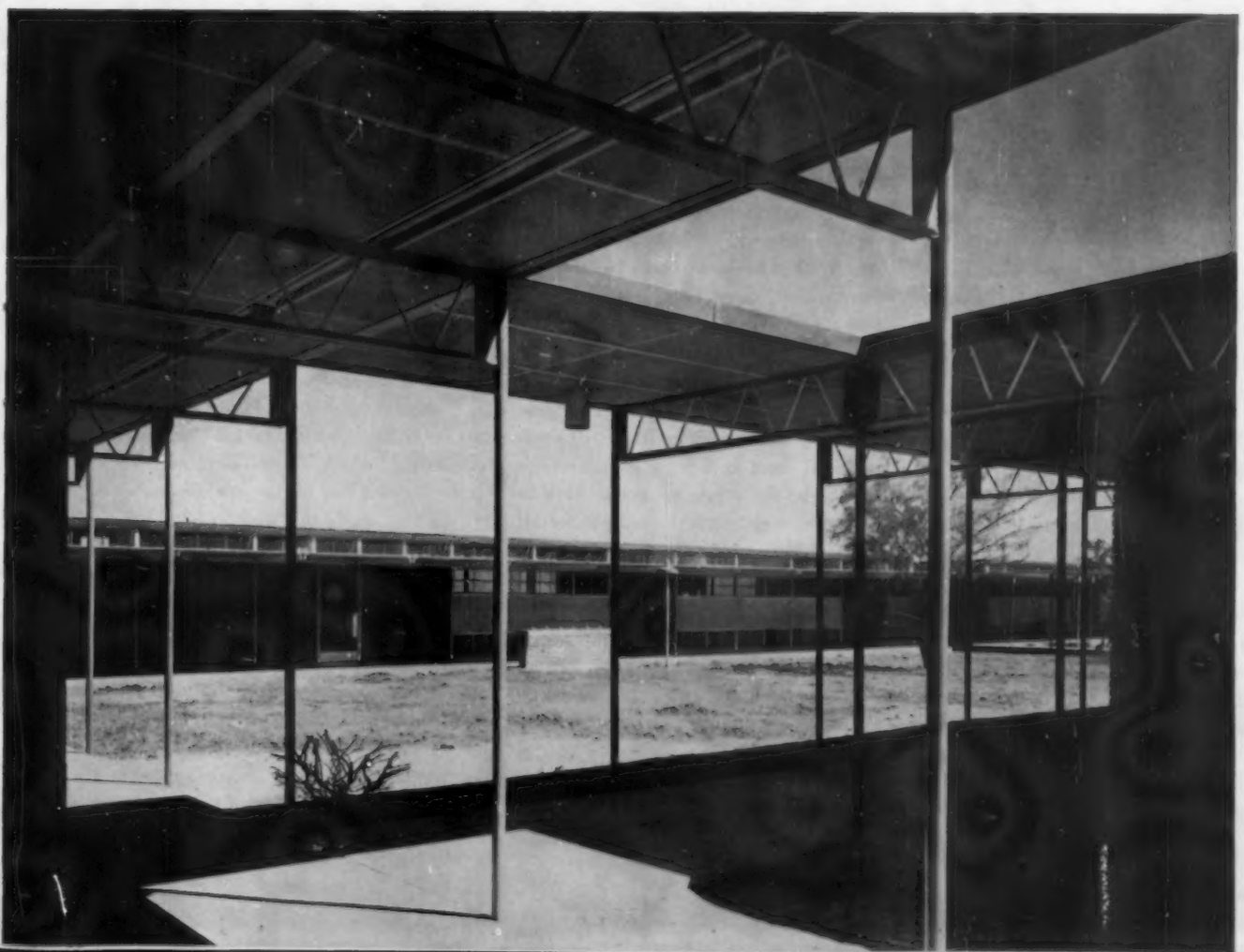
school: steel frame

In its major planning features the elementary school in Brownsville, Texas closely resembles the Harlingen school shown on previous pages. Again the plan is decentralized into smaller classroom units, administration building *(foreground above)*, and auditorium-cafeteria combination *(background above)*. Classrooms face north and south and building units are connected with corrugated aluminum canopies. However, for ease and speed of erection the architects chose steel as the structural material.

Here the regular pattern of the steel frame, brightly painted to lend a cheerful atmosphere, is the "common denominator" tying together the various parts of the school. Pipe columns (2″ I.D.) welded to 14″ steel joists occur 7′ 8½″ on center. The roof decking is composed of 2″ gypsum concrete, faced on the underside with glass-fiber formboards, left exposed to provide an acoustical ceiling. Unique foundations, specially developed by the architects to reduce slab cracks were again used in this instance. This project, more than any other, sums up the firm's objectives: omission of unessentials, maximum economy combined with structural stability, and logical use of materials allowing the elements of the structure to speak for themselves. W. D. Ferguson & Sons was General Contractor.



Treatment of north and south walls is similar to Harlingen school. South wall of classroom (above left) *features 16-gage G.I. sheet metal set into aluminum sliding sash at the floor line. The center panel is faced on the exterior with 3/8" asbestos cement panels, on the interior with blackboards or tackboards* (above right). *The window extending up to the corridor canopy is aluminum sliding type. Clerestory above canopy has fixed glass. North wall* (right) *has large window partially operable. Interior partitions are of 1-9/16" structural insulating panels; endwalls are brick cavity construction. Lighting is by slim line fixtures; heating by suspended unit heaters.*



solar-window overhang:

by F. W. Hutchinson* and M. O. Cotter**

The function of a solar window is to admit heat and light, during the winter months, and to admit light but exclude heat, during the summer months. This objective requires that the window be exposed to direct sunshine for a large fraction of the day during the winter, but shaded from direct sunshine for as large a fraction as possible of the summer day. Shading can, of course, be obtained through manual operation of blinds, draperies, louvers, adjustable drops, or variable types of roof overhang; in many such cases, however, such special devices are unnecessary due to the fortunate circumstance that solar mechanics assist the designer in providing automatic seasonal control of shading for south-wall windows.

In midwinter, the sun rises south of the east-west line and describes an arc which brings it to a maximum elevation (within the latitude range of the United States) of from 20° to approximately 40°, the value of the maximum varying with latitude. In midsummer, the sun rises north of the east-west line and describes an arc which brings it to a maximum elevation (again for the range of latitude of the United States) of from, roughly, 65° to 85°. The ratio of maximum summer elevation to maximum winter elevation varies with latitude, but is of the order of from 2 to 3. Hence, it is evident that by designing an overhanging roof in conjunction with a south-wall solar window, it is possible to exclude the high midday summer sun while admitting the much lower midday winter sun.

Control of shading during the morning and afternoon hours is less complete, but does retain a high degree of effectiveness due to the fact that from April 21 to August 21 the sunrise and sunset are north of the east-west line; hence, throughout this warm season, the sun does not irradiate a south window just as it crosses the horizon. In mid-June, for example, sunrise on the 40th parallel of latitude (corresponding roughly to the location of Denver, Columbus, and Philadelphia) is before 5 a.m., yet the sun does not shine on a south wall until after 8 a.m. and by that time it is already at an elevation of nearly 40°; thus, in this case, the *minimum* elevation for midsummer is higher than the *maximum* for midwinter. This factor becomes of even greater significance when it is realized that (again at latitude 40°) throughout the greater part of May, June, and July, the minimum elevation at which irradiation of a south wall occurs is always greater than the elevation at solar noon throughout November, December, and January.

basis of overhang design

The limiting cases of roof overhang obviously correspond to the extremes of excluding all summer sun or admitting all winter sun. Thus at latitude 40° the sun could be excluded from mid-April throughout mid-August, if a sufficient length of overhang were provided to shade the window when the solar altitude is 20°. If, however, complete irradiation is desired from mid-September through mid-March, the overhang would have to be short enough to admit sunlight for all elevations below 50°; obviously these two conditions are mutually incompatible. Thus some type of compromise is necessary if a fixed length of roof overhang is to be used. The basis for such a compromise is arbitrary and must, therefore, remain largely a matter of judgment and of esthetics.

In localities where the summers are particularly hot, greater amounts of overhang will often be used with resultant partial sacrifice of winter heating effect, whereas in localities characterized by cold winters and moderate summers, the overhang may be designed to provide a greater thermal gain in winter at the expense of some undesirable heat gain in summer. The latter difficulty often is not of appreciable practical importance, since it is probable that the undesirable summer irradiation will be avoided by manual adjustment of shading. In this respect, it is well to note that where doubt or indecision exists as to the amount of overhang to provide, it is always preferable to use too little rather than too much. Correction for insufficient overhang is relatively simple and can be accomplished by many types of seasonal or manual adjustments such as awnings, drops, etc., but correction for excess overhang would necessarily involve a major alteration of the structure.

In establishing a basis for design of roof overhang, two relatively independent decisions must be made. The first is to select the solar elevation corresponding to which the entire window is to be irradiated, whereas the second is to select the elevation at which the window is to be entirely in the shade. A common selection for complete irradiation is the solar elevation, at the latitude of the particular installation, which occurs at solar noon on the shortest day of the year, December 21; on this basis the window would be partially shaded at noon on all other days of the year. A common alternative is to select the solar elevation at noon on the 21st of October or November. On either of these bases the window would be completely irradiated for all sunshine hours from October 21 through February 21, or from November 21 through January 21, but would be partially shaded at noon throughout the remainder of the year.

* *Professor of Mechanical Engineering, University of California, Berkeley, Calif.*
** *Engineering Consultant, Montclair, Calif.*

summer and winter effectiveness

The decision with respect to complete shading may be based on the solar elevation at noon on the longest day of the year, June 21; in this event the entire window would be in the shade only (at solar noon) on this one day. If shading is based on the noon elevation for some later month, as the 21st of July or August, the window would then be completely shaded at noon from May 21 to July 21, or from April 21 to August 21. For times when the window is partially shaded, the fraction receiving direct sunshine will depend on the full-radiation design condition as well as the full-shade condition, since for a fixed basis of full shading the height of the window will vary with the condition for complete irradiation.

design constants

Developed from the principles outlined above, Table I[1] gives the required geometrical relationship between length of overhang and base of the window for the more common summer-design criteria. Thus if full shading of a solar window is to be obtained at solar noon on June 21, for a structure located at latitude 30°, the value of b' is read from Table I as 878. This number is equal to the required vertical distance from underside of overhang to bottom of window, the distance being expressed as a percentage of the overhang. Thus if the overhang for a particular window were 10″, the vertical distance would have to be 87.8″. Reversing the procedure, if the vertical distance is fixed as part of the architectural design, the required length of overhang, 0, for June design can be readily calculated. Example: In a structure where the distance from floor to underside of overhang is 9′, the bottom of a solar window is to be arbitrarily located 1′ above the floor. In this case the vertical distance from underside of overhang to bottom of window is 96″, so the required length of overhang will be 96/8.78 or slightly less than 11″.

Table II is similar in form to Table I, but gives the vertical distance, c', expressed as a percentage of length of overhang, from underside of overhang to top of window for common winter-shading criteria. Example: In the previous

Table I—Values of shading distance, b', for summer design

Latitude	30°	35°	40°	45°
June	878	514	327	254
July	598	401	282	219
Aug	317	236	192	156

Table II—Values of shading distance, c', for winter design

Latitude	30°	35°	40°	45°
Oct	115	97	81	67
Nov	84	70	55	45
Dec	75	60	47	40

[1] *Refer to appendix for derivations of the equations from which the various tabular data have been obtained.*

Table III—Latitude: 30°

Solar time	Angle of incidence i	Effective solar altitude H'	a	b June	b July	b Aug	c Oct	c Nov	c Dec
Dec									
8 am, 4 pm	56°	19°	34	844	564	283	0	0	0
9 am, 3 pm	48	28	53	825	545	264	0	0	0
10 am, 2 pm	42	33	65	813	533	252	0	0	0
11 am, 1 pm	38	36	73	805	525	244	0	0	0
12 noon	37	37	75	803	523	242	0	0	0
Jan or Nov									
8 am, 4 pm	58°	23°	42	836	556	275	0	0	0
9 am, 3 pm	51	33	65	813	533	252	0	0	0
10 am, 2 pm	45	37	74	804	524	243	0	0	0
11 am, 1 pm	41	39	82	796	516	235	0	0	7
12 noon	40	40	84	794	514	233	0	0	9
Feb or Oct									
8 am, 4 pm	64°	36°	72	806	526	245	0	0	0
9 am, 3 pm	58	43	92	786	505	225	0	8	17
10 am, 2 pm	53	46	104	774	494	213	0	20	29
11 am, 1 pm	50	48	112	766	486	205	0	28	37
12 noon	49	49	115	763	483	202	0	31	40
Mar or Sept									
7 am, 5 pm	83°	56°	150	728	448	167	35	66	75
8 am, 4 pm	76	58	159	719	439	158	44	75	84
9 am, 3 pm	70	58	163	715	435	154	48	79	88
10 am, 2 pm	65	59	166	712	432	151	51	82	91
11 am, 1 pm	60	59	166	712	432	151	51	82	91
12 noon	60	59	166	712	432	151	51	82	91
Apr or Aug									
8 am, 4 pm	85°	81°	598	280	0	0	483	514	523
9 am, 3 pm	79	75	373	505	225	0	258	289	298
10 am, 2 pm	75	72	316	562	282	1	201	232	241
11 am, 1 pm	72	71	294	584	304	23	179	210	219
12 noon	71	71	290	588	308	27	175	206	215
May or July									
8 am, 4 pm	—	—	—	—	—	—	—	—	—
9 am, 3 pm	70°	87°	2120	0	0	0	2005	2036	2045
10 am, 2 pm	84	83	801	77	0	0	686	717	726
11 am, 1 pm	81	81	602	276	0	0	487	518	527
12 noon	80	80	567	311	31	0	452	483	492
June									
8 am, 4 pm	—	—	—	—	—	—	—	—	—
9 am, 3 pm	—	—	—	—	—	—	—	—	—
10 am, 2 pm	87°	86°	1610	0	0	0	1495	1526	1535
11 am, 1 pm	84	84	986	0	0	0	871	902	911
12 noon	84	84	951	0	0	0	836	867	876

example 11″ of overhang were required for June shading of the window. If this same window were to be fully irradiated at solar noon on December 21, the window height would be determined as follows: From Table II for December and for 30° latitude the distance c' is read as 75; then, since overhang is already established as 11″, it follows that the vertical distance from underside of overhang to top of the window must be .75 x 11 or 8¼″; the required window height to meet the selected design conditions is therefore 96 — 8¼ or 87½″. (In practice a standard window height would be selected giving an approximation to the theoretical value.)

partial shading and partial irradiation

The selection of the boundary shading values—as discussed above—is a very simple matter, since the actual elevation of the sun at solar noon is equal to its elevation measured in a vertical plane normal to a south-facing window. For any time of day other than solar noon, however, the *effective* solar altitude differs from the actual value and can be obtained only by trigonometric computation. Thus at solar noon on December 21, latitude 30°, the actual elevation is 37° and this is also equal to the effective elevation. At 9 a.m., 10 a.m., and 11 a.m. (correspondingly at 1 p.m., 2 p.m., and 3 p.m.) on this same day the actual solar altitudes are 21°, 29°, and 35°, respectively, whereas the corresponding effective solar altitudes are 28°, 33°, and 36°, respectively (*refer to 3rd column of Table III*). Thus not only do the effective altitudes differ from the actual, but the variation increases nonlinearly as a function of the number of hours on either side of solar noon.

Insofar as the authors are aware, no

Table VII—Values of window height, d, for summer-winter overhang designs

Latitude	30°	35°	40°	45°
June-Oct	763	417	246	187
June-Nov	794	444	272	209
June-Dec	803	454	280	214
July-Oct	483	304	201	152
July-Nov	514	331	227	174
July-Dec	523	341	235	169
Aug-Oct	202	139	111	89
Aug-Nov	233	166	137	111
Aug-Dec	242	175	145	115

published data exist on seasonal variation of effective solar altitude. Lacking such data it is a time consuming task to calculate the effectiveness (whether with respect to partial shading or to partial irradiation) of a solar window. To correct this difficulty Tables III through VI have been prepared for latitudes 30°, 35°, 40°, and 45°, respectively. Each table provides hourly values, on the 21st day of each month, of the angle of incidence, i, of direct solar radiation on a south-facing window and of the effective solar altitude, H', with respect to such a window.

To further reduce the effort needed in computing the instantaneous effectiveness of solar-window overhang, the tables give values of three instantaneous constants a, b, and c. By use of these constants,[2] together with d from Table VII, the architect or engineer can immediately determine the fraction of a solar window that is "working" at any time during the winter months and the fraction that is directly irradiated (thus increasing cooling load) at any time during the summer months. Example: A south-facing solar window at 40° latitude is so designed that complete shading occurs at solar noon only on June 21 and complete irradiation at solar noon only on December 21. At solar noon of any month other than December this window will be partially shaded; considering February, for example, the shading constant, c' is read from the 10th column of Table V (for 12 noon in either February or October) as 34. From Table VII the value of d for June-December design conditions is read as 280. The shading condition for this window at solar noon in either February or October is then:

[2] *Refer to appendix for development of the physical and geometric significance of these constants.*

Table IV—Latitude: 35°

Solar time	Angle of incidence i	Effective solar altitude H'	a	b			c		
				June	July	Aug	Oct	Nov	Dec
Dec									
8 am, 4 pm	55°	17°	30	484	371	206	0	0	0
9 am, 3 pm	46	23	42	472	359	194	0	0	0
10 am, 2 pm	38	27	52	462	349	184	0	0	0
11 am, 1 pm	33	30	58	456	343	178	0	0	0
12 noon	31	31	60	454	341	176	0	0	0
Jan or Nov									
8 am, 4 pm	57°	19°	35	479	366	201	0	0	0
9 am, 3 pm	49	29	54	460	347	182	0	0	0
10 am, 2 pm	42	32	63	451	338	173	0	0	3
11 am, 1 pm	36	33	65	449	336	171	0	0	5
12 noon	35	35	70	444	331	166	0	0	10
Feb or Oct									
8 am, 4 pm	63°	33°	65	449	336	171	0	0	5
9 am, 3 pm	57	40	84	430	317	152	0	14	24
10 am, 2 pm	50	42	91	423	310	145	0	21	31
11 am, 1 pm	45	43	93	421	308	143	0	23	33
12 noon	44	44	97	417	304	139	0	27	37
Mar or Sept									
7 am, 5 pm	82°	52°	129	385	272	107	32	59	69
8 am, 4 pm	74	53	134	380	267	102	37	64	74
9 am, 3 pm	66	54	135	379	266	101	38	65	75
10 am, 2 pm	61	54	135	379	266	101	38	65	75
11 am, 1 pm	56	54	136	378	265	100	39	66	76
12 noon	56	55	140	374	261	96	43	70	80
Apr or Aug									
8 am, 4 pm	83°	77°	432	82	0	0	335	362	372
9 am, 3 pm	77	71	292	222	109	0	195	222	232
10 am, 2 pm	72	69	250	254	141	0	163	190	200
11 am, 1 pm	67	66	227	287	174	9	130	157	167
12 noon	66	66	225	289	176	11	128	155	165
May or July									
8 am, 4 pm	—	—	—	—	—	—	—	—	—
9 am, 3 pm	84°	82°	736	0	0	0	639	666	676
10 am, 2 pm	79	78	462	52	0	0	365	392	402
11 am, 1 pm	76	76	389	125	12	0	292	319	329
12 noon	75	75	373	141	28	0	276	303	313
June									
8 am, 4 pm	—	—	—	—	—	—	—	—	—
9 am, 3 pm	87°	86°	1414	0	0	0	1317	1344	1354
10 am, 2 pm	82	81	650	0	0	0	553	580	590
11 am, 1 pm	79	79	520	0	0	0	423	450	460
12 noon	78	78	470	44	0	0	373	400	410

Table V—Latitude: 40°

Solar time	Angle of incidence i	Effective solar altitude H'	a	b June	b July	b Aug	c Oct	c Nov	c Dec
Dec									
8 am, 4 pm	55°	15°	27	300	255	165	0	0	0
9 am, 3 pm	44	19	34	293	248	158	0	0	0
10 am, 2 pm	35	23	42	285	240	150	0	0	0
11 am, 1 pm	28	25	46	281	236	146	0	0	0
12 noon	25	25	47	280	235	145	0	0	0
Jan or Nov									
8 am, 4 pm	56°	16°	28	299	254	164	0	0	0
9 am, 3 pm	46	22	40	287	242	152	0	0	0
10 am, 2 pm	38	27	52	275	230	140	0	0	5
11 am, 1 pm	32	29	55	272	227	137	0	0	8
12 noon	29	29	55	272	227	137	0	0	8
Feb or Oct									
8 am, 4 pm	63°	30°	57	270	225	135	0	2	10
9 am, 3 pm	53	34	68	259	214	124	0	13	21
10 am, 2 pm	46	37	76	251	206	116	0	21	29
11 am, 1 pm	41	38	79	248	203	113	0	24	32
12 noon	39	39	81	246	201	111	0	26	34
Mar or Sept									
7 am, 5 pm	82°	47°	107	220	175	85	26	52	60
8 am, 4 pm	72	48	110	217	172	82	29	55	63
9 am, 3 pm	63	48	111	216	171	81	30	56	64
10 am, 2 pm	57	49	115	212	167	77	34	60	68
11 am, 1 pm	51	50	118	209	164	74	37	63	71
12 noon	50	50	119	208	163	73	38	64	72
Apr or Aug									
8 am, 4 pm	80°	72°	302	25	0	0	221	247	255
9 am, 3 pm	74	67	232	95	50	0	151	177	185
10 am, 2 pm	67	64	201	126	81	0	120	146	154
11 am, 1 pm	63	62	189	138	93	3	108	134	142
12 noon	61	61	180	147	102	12	99	125	133
May or July									
8 am, 4 pm	88°	86°	1340	0	0	0	1259	1285	1293
9 am, 3 pm	81	77	444	0	0	0	363	389	397
10 am, 2 pm	75	73	318	9	0	0	237	263	271
11 am, 1 pm	72	70	281	46	1	0	200	226	234
12 noon	70	70	275	52	7	0	194	220	228
June									
8 am, 4 pm	—	—	—	—	—	—	—	—	—
9 am, 3 pm	84°	82°	686	0	0	0	605	631	639
10 am, 2 pm	78	77	424	0	0	0	343	369	377
11 am, 1 pm	74	74	345	0	0	0	264	290	298
12 noon	74	73	334	0	0	0	253	279	287

$$\% \text{ Window shaded} = 100(c/d)$$
$$= 100(34/280)$$
$$= 12.2\%$$

If the seasonal effectiveness of this window as a source of winter heating is being investigated the shading factor would indicate that only 87.8 percent of the window area would be transferring direct solar radiation at solar noon in February. Conversely, if October cooling load were being checked the overhang would be only 12.2 percent effective in preventing the direct transmission and/or absorption of solar energy.

The irradiation percentage (87.8 percent) could also be obtained directly by noting from Table V that the b value equals 246, hence:

$$\% \text{ Window irradiated} = 100(b/d)$$
$$= 100(246/280)$$
$$= 87.8\%$$

Referring to the fifth column of Table V, the b value at 9 a.m. in January (or November) is 287. Then:

$$\% \text{ Window irradiated} = 100(b/d)$$
$$= 100(287/280)$$
$$= 102.5\%$$

Since values in excess of 100 percent are obviously impossible, the above result must be interpreted as meaning that the shadow line is above the top of the window; hence an opaque wall depth of 2.5 percent of window height is subject to direct irradiation. Conversely, from column 10 of Table V, the b value at 9 a.m. (or 3 p.m.) in May (or July) is 397. Then:

$$\% \text{ Window shaded} = 100(c/d)$$
$$= 100(397/280)$$
$$= 142\%$$

This result indicates that the shade line is below the bottom of the window; hence not merely is the window wholly protected from solar irradiation, but an opaque wall depth below the window

(equal in distance to 42 percent of the window height) is likewise in shadow.

summary

Although the design of overhang for solar windows is based on boundary conditions for which the window is to be fully irradiated or fully shaded, the performance of such windows—either in admitting solar energy in winter or excluding such energy in summer—largely depends on seasonal conditions of partial shading. Evaluation of partial shading requires knowledge of the "effective" solar altitude, that is, the sun's elevation as measured in a projected vertical plane normal to the surface of the window; so far as the authors are aware this paper represents the first publication of seasonal hourly values of the effective solar altitude.

Tabular values of solar constants are presented for south-facing windows located at 30°, 35°, 40°, and 45° of latitude (values for other latitudes can be readily obtained by either interpolation or extrapolation). From the constants given in the tables the instantaneous and the seasonal performance—either with respect to winter advantage or to summer disadvantage—of a solar window can be obtained based on exact shading conditions at any hour of any clear day; seasonal values can be obtained by summation of hourly effective transmission rates or of daily averages.

In practical use the data presented should assist the architect in selecting and evaluating the effectiveness of overhang for a particular size and type of solar window; it should also assist the heating and air-conditioning engineer in calculating the seasonal effect, either for summer or winter, of south-facing glass areas.

Table VI—Latitude: 45°

Solar time	Angle of incidence i	Effective solar altitude H'	a	b			c		
				June	July	Aug	Oct	Nov	Dec
Dec									
8 am, 4 pm	54°	5°	9	245	210	147	0	0	0
9 am, 3 pm	42	14	26	228	193	130	0	0	0
10 am, 2 pm	31	15	26	228	193	130	0	0	0
11 am, 1 pm	23	19	34	220	185	122	0	0	0
12 noon	22	22	40	214	179	116	0	0	0
Jan or Nov									
8 am, 4 pm	55°	10°	17	237	202	139	0	0	0
9 am, 3 pm	45	18	32	222	187	124	0	0	0
10 am, 2 pm	34	19	35	219	184	121	0	0	0
11 am, 1 pm	27	23	42	212	177	114	0	0	2
12 noon	24	24	45	209	174	111	0	0	5
Feb or Oct									
8 am, 4 pm	62°	25°	48	206	171	108	0	3	8
9 am, 3 pm	52	31	60	194	159	96	0	15	20
10 am, 2 pm	42	32	62	192	157	94	0	17	22
11 am, 1 pm	36	33	65	189	154	91	0	20	25
12 noon	34	34	67	187	152	89	0	22	27
Mar or Sept									
7 am, 5 pm	79°	41°	88	166	131	68	21	43	48
8 am, 4 pm	70	44	95	159	124	61	28	50	55
9 am, 3 pm	61	44	95	159	124	61	28	50	55
10 am, 2 pm	53	44	96	158	123	60	29	51	56
11 am, 1 pm	47	44	98	156	121	58	31	53	58
12 noon	45	45	100	154	119	56	33	55	60
Apr or Aug									
8 am, 4 pm	79°	69°	257	0	0	0	190	212	217
9 am, 3 pm	69	61	178	76	41	0	111	133	138
10 am, 2 pm	62	58	157	97	62	0	90	112	117
11 am, 1 pm	58	57	153	101	66	3	86	108	113
12 noon	56	56	148	106	71	8	81	103	108
May or July									
8 am, 4 pm	85°	82°	670	0	0	0	603	625	630
9 am, 3 pm	77	72	306	0	0	0	239	261	266
10 am, 2 pm	71	68	249	5	0	0	182	204	209
11 am, 1 pm	66	62	188	66	31	0	121	143	148
12 noon	65	61	180	74	39	0	113	135	140
June									
8 am, 4 pm	87°	85°	1120	0	0	0	1053	1075	1080
9 am, 3 pm	79	76	403	0	0	0	336	358	363
10 am, 2 pm	74	71	287	0	0	0	220	242	247
11 am, 1 pm	70	69	259	0	0	0	192	214	219
12 noon	69	69	255	0	0	0	188	210	215

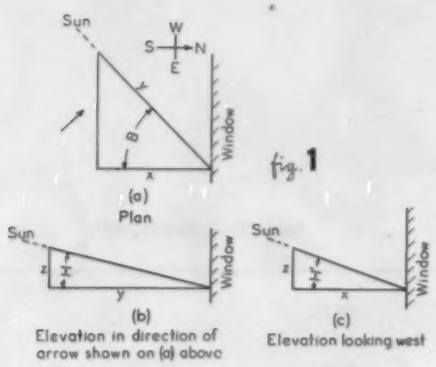


fig. 1

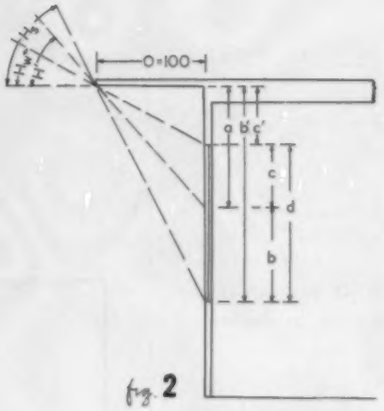


fig. 2

appendix

Figure 1 abc provides a graphic visualization of the method used for evaluating the effective solar altitude, H'. At any time of any day of the year the sun's altitude, H, measured in degrees above the horizon, and its azimuth, A, measured in degrees east or west of north, are obtainable from standard sources (Bulletins 71 and 214 of the Hydrographic Office). Knowing the azimuth, A, the horizontal angle, B, which the sun makes with respect to a normal to a south-facing solar window, is then obtained as:

$$B = 180 - A \qquad (a)$$

This angle, B, is shown in the plan view of Figure 1a where the arbitrarily selected distance out from the window, along the normal to the window, is called x and the corresponding hypotenuse of the indicated right triangle is then y. By observation:

$$y = x/\cos B \qquad (b)$$

Now taking an elevation in a direction normal to y gives Figure 1b where the distance out from the window along the normal is y and the angle H is the true solar elevation. The vertical leg of the right triangle of Figure 1b is then:

$$z = y \tan H \qquad (c)$$

The effective solar altitude, H', is the sun's apparent elevation when projected on a vertical plane through the normal to the window. Referring to Figure 1c the horizontal distance out along the normal is x, (as evident from Figure 1a), and the vertical distance is z (as evident from Figure 1b), hence the unknown angle H' is that angle for which the tangent is z/x:

$$H' = \tan^{-1}(z/x) \qquad (d)$$

Substituting from equations b and c,

$$H' = \tan^{-1}[(y \tan H)/x]$$
$$= \tan^{-1}[(x \tan H)/(x \cos B)]$$
$$= \tan^{-1}[(\tan H)/(\cos B)] \qquad (e)$$

With the effective solar elevation known, it is now possible to determine the extent of either shading or irradiation for any selected solar overhang at any time of any day. Referring to Figure 2, let 0 be the length of horizontal overhang extending out over a south-facing solar window of height d where b' is the vertical distance from the underside of the overhang to the bottom of the window and c' is the vertical distance from the underside of the overhang to the top of the window. Note that:

$$d = b' - c' \qquad (f)$$

The distance b' is determined by the true solar elevation H_s at solar noon on that summer day —selected by the designer—for which the window is to be fully shaded. (Based on this criterion the shading distance—a of Figure 2 —will equal distance b' at solar noon on the selected day.) Having selected a date for full shading, the angle H_s is obtained from standard sources (Hydrographic Bulletins 71 and 214) and b' is then calculated as:

$$b' = 0(\tan H_s) \qquad (g)$$

If 0 is arbitrarily taken as 100, equation g becomes

$$b' = 100(\tan H_s) \qquad (h)$$

and b' is then equal to the maximum depth of shade expressed as a percentage of the length of overhang. Table I gives values of b' for full shading at solar noon on June 21, July 21, or August 21.

Similarly, the distance c' is determined by the selected design date for which the window is to be fully irradiated (a = c') at solar noon. Then:

$$c' = 100(\tan H_w) \qquad (i)$$

where H_w is the sun's elevation at solar noon on the selected winter day. Table II gives values of c' for design dates of October 21, November 21, or December 21.

By observation from Figure 2 the fractional irradiation of the window at any time, on any day, is given by the expression

$$(a - c')/(b' - c') \qquad (j)$$

where a is the actual position of the shade line at the time in question. But,

$$a = 0(\tan H') \qquad (k)$$

and for a selected 0 value of 100,

$$a = 100(\tan H') \qquad (l)$$

where a is now expressed as a percentage of the length of overhang. Values of a are given at every hour on the 21st of every month[2] in the fourth column of Tables III, IV, V, and VI. From Figure 2 it is evident that:

$$c = a - c' \qquad (m)$$

Hence, by substituting from f and m into expression j, and multiplying by 100,

$$\%\ \text{Window irradiated} = 100(c/d) \qquad (n)$$

The value of c depends on the selected winter-shading criterion; tabular values are given for October, November, and December in Tables III through VI. The value of d depends on both summer and winter design conditions; tabular values for nine such sets of conditions are given in Table VII.

The fractional shading of the window (from Figure 2) is given by:

$$(b' - a)/(b' - c') \qquad (o)$$

but,

$$b = b' - a \qquad (p)$$

so, substituting from equations f and p and multiplying by 100 gives:

$$\%\ \text{Window shaded} = 100\ (b/d) \qquad (q)$$

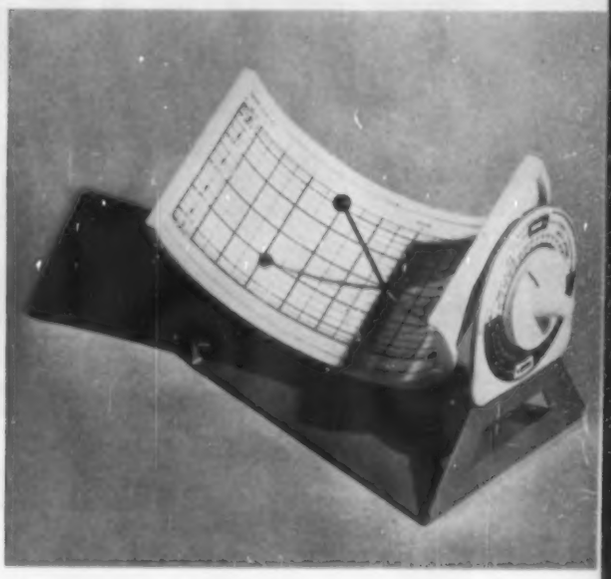
The value of b depends on the selected summer-shading criterion; values based on June, July, and August are given in the fifth, sixth, and seventh columns of Tables III-VI.

---

[2] *The tabular a values are exact for September through March. For April through August the tables were set up from available calculations† which were based on the first rather than the 21st of the month, hence for these months slight error—usually less than five percent—will sometimes occur.*

† *R. F. Quan and F. W. Hutchinson. "Solar Irradiation of Walls and Windows: South-Facing: May-September," Heating, Piping & Air Conditioning (September 1954).*

shade-dial



A recent result of Aladar and Victor Olgyay's continuing research in bioclimatology (they are now professors at Princeton's School of Architecture) has been the development of the Shade-dial—an instrument which readily enables one to reproduce on models the actual conditions of light, shade, and shadow produced by the sun. These conditions can be simulated for any geographical location, any day of the year, and any time of the day.

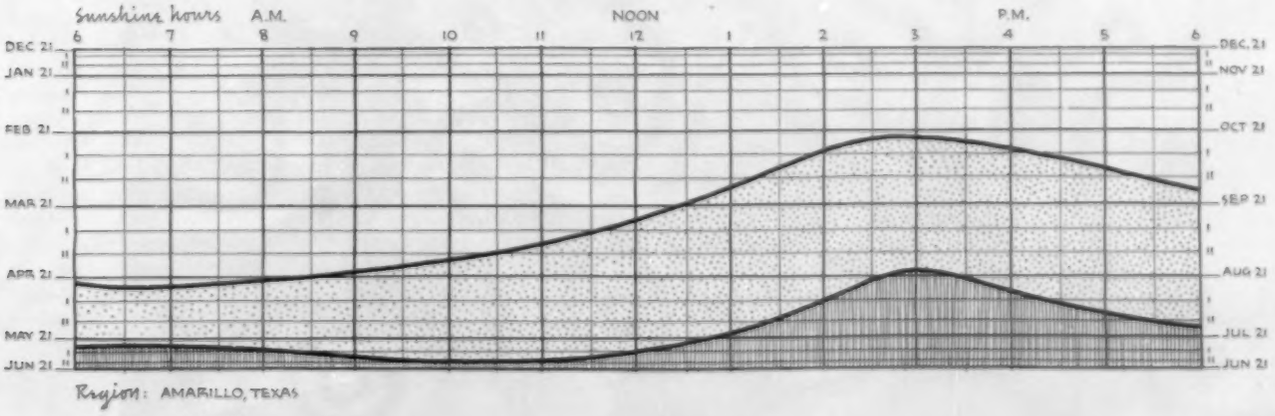
Although the effects of insolation can be studied by calculation methods, the process is generally laborious and time consuming. A fair number of heliodons (sun machines that move a light source by calibrated mechanical adjustments) have been developed for this kind of study; however, all have suffered from two disadvantages: the divergence of lamp rays makes accurate measurements difficult; the excessive size and construction cost has limited their use mainly to institutions and experimental stations. Several sundial-type devices have also been used to measure shading on models, but these, too, have had their limitations.

Sundials are familiarly used to tell us the time of day for a given location of the sun. If, however, they are used in reverse, they can tell us where the sun's relative position in the sky should be for a given location and time. The Shade-dial operates on this latter principle and overcomes most of the disadvantages associated with other methods. Here's how it is used.

Place the Shade-dial on the base of the model *(as shown in photo above)* so that the bottom of the instrument is parallel with the horizontal plane of the model. The latitude knob (on right of the instrument) should be set to correspond with the latitude where the building is to be constructed. A "north" sign, located on the latitude knob, should point in the same direction as that of the model. Note that the instrument has a semicircular dial calibrated for seasonal and hourly changes *(like chart below but without shaded areas)*. In the center is a small ball which, when illuminated, casts a shadow on the dial indicating the month and hour corresponding to the position of the sun (or simulated sun). The light source can be either an ordinary table lamp or the sun itself. In the case of the former, the lamp is moved until the shadow on the dial indicates the day and hour at which shading on the model is to be studied. If the sun is used as the light source, then the model and Shade-dial are tilted and turned together until the shadow indicates the desired time for measurement.

Dial charts, like the one illustrated *(below)*, have been developed for representative areas of the country to indicate overheated or underheated periods where different shading conditions are required.

Shade-dials are now manufactured and distributed by Universal Corporation, 6710 Denton Drive, Dallas 9, Texas. They have been produced for architects, engineers, and designers to help promote the proper design of shading devices. Approximate cost is $9.



aircraft assembly plant

location	Calverton, New York
architects	Office of Alfred Easton Poor
consulting engineers	Seelye, Stevenson, Value & Knecht

This immense assembly plant and flight-testing facility was designed and built for assembly and testing of jet planes manufactured by the Grumman Aircraft Engineering Corporation for the U.S. Navy. For security reasons, details of operation do not concern us here. But the design and construction of this unusually distinguished group of industrial buildings, where noise exclusion was a major design factor, hold much architectural interest.

The 4400-acre site, well out on Long Island, was selected because (1) the huge unbuilt-on acreage was available in that area; (2) location in the country was considered best from the safety angle; (3) the high-noise-level problem would confront as few as possible; and (4) the land was dotted with trees and scrub oak, which, in themselves, were considered useful in keeping noise to a minimum.

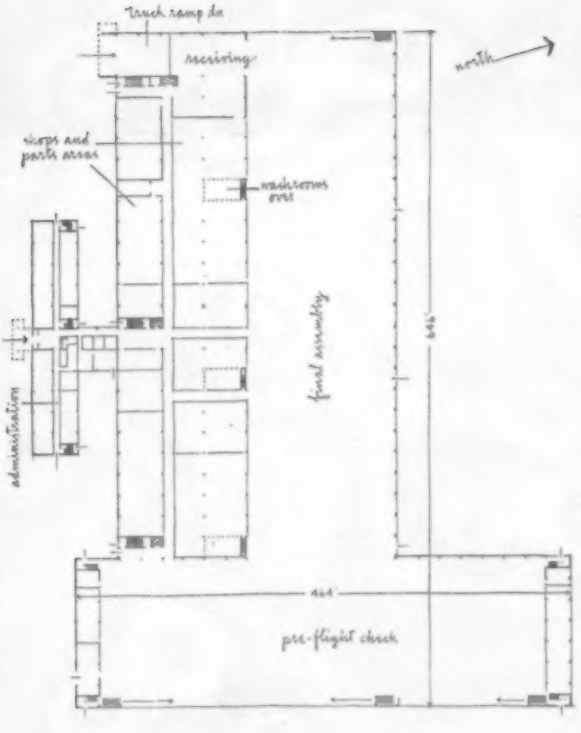
Major buildings of the installation are (a) a 646-ft-long, L-shaped assembly building, to which the administration-cafeteria building is connected; (b) a 528-ft-wide hangar and operations building; (c) paint shop; (d) steam plant; (e) warehouse; and (f) service structures. Except for such open areas as hangars, the buildings are air conditioned.

Behind the long, low administration building (detail below) *is the giant assembly building, where subassemblies are received by either truck or rail and proceed to the assembly area. A 40-ft-long passage joins this unit with the administration building.*

A courtyard (right) *separates the administration building (left of photo) from the assembly building.*

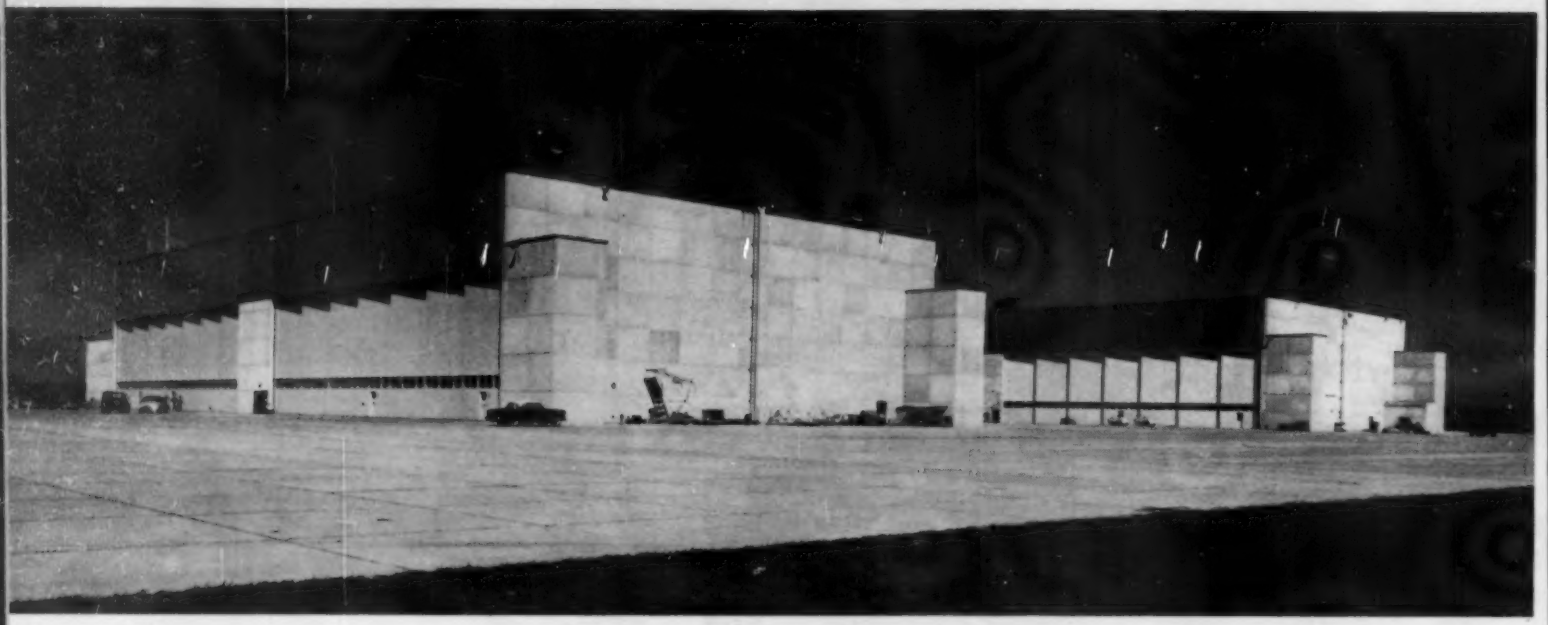
On an upper level of the assembly building is the plant cafeteria (bottom).

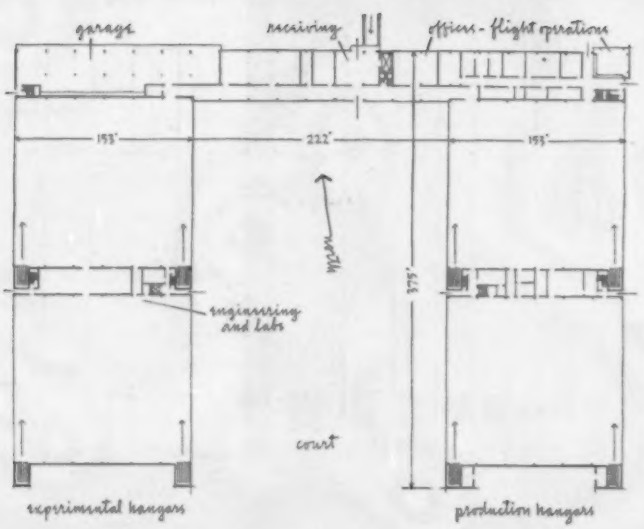
Photos: Gottscho-Schleisner



All units are steel framed (because of huge spans involved; also for erection speed). Exterior wall surfacing, except in the administration wing (where aluminum-faced, galvanized steel backed, insulated sandwich panels are used), consists of precast, reinforced concrete sandwich panels with a core of glass-fiber insulation (chosen over masonry for speed of erection in winter; relatively low cost and for their insulative properties that assist both thermal conditions and the very serious problem of noise exclusion). Above the concrete panels, where less weight was desired, insulated aluminum cellular panels were used. In the roofs, between concrete-plank roof decking and built-up roofing is 1-¼ in. of insulation.

aircraft assembly plant

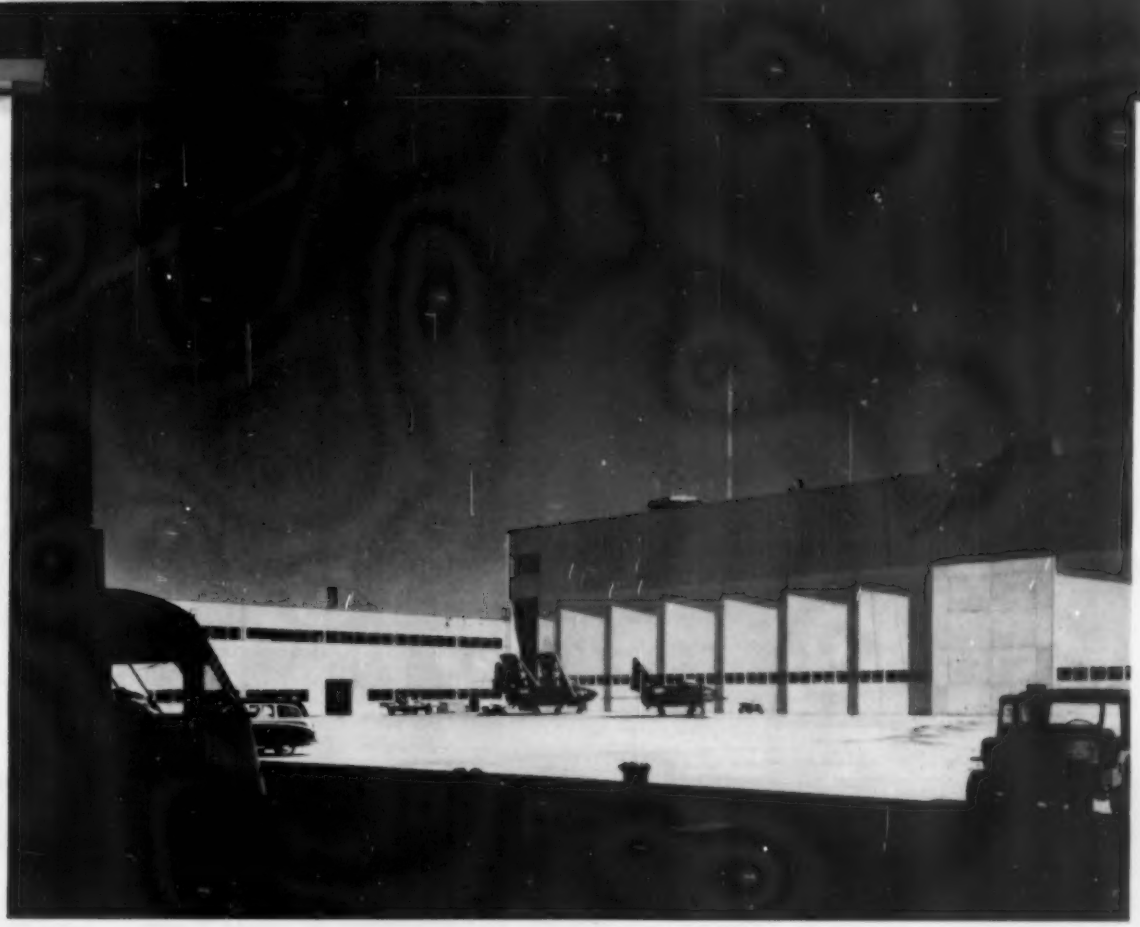


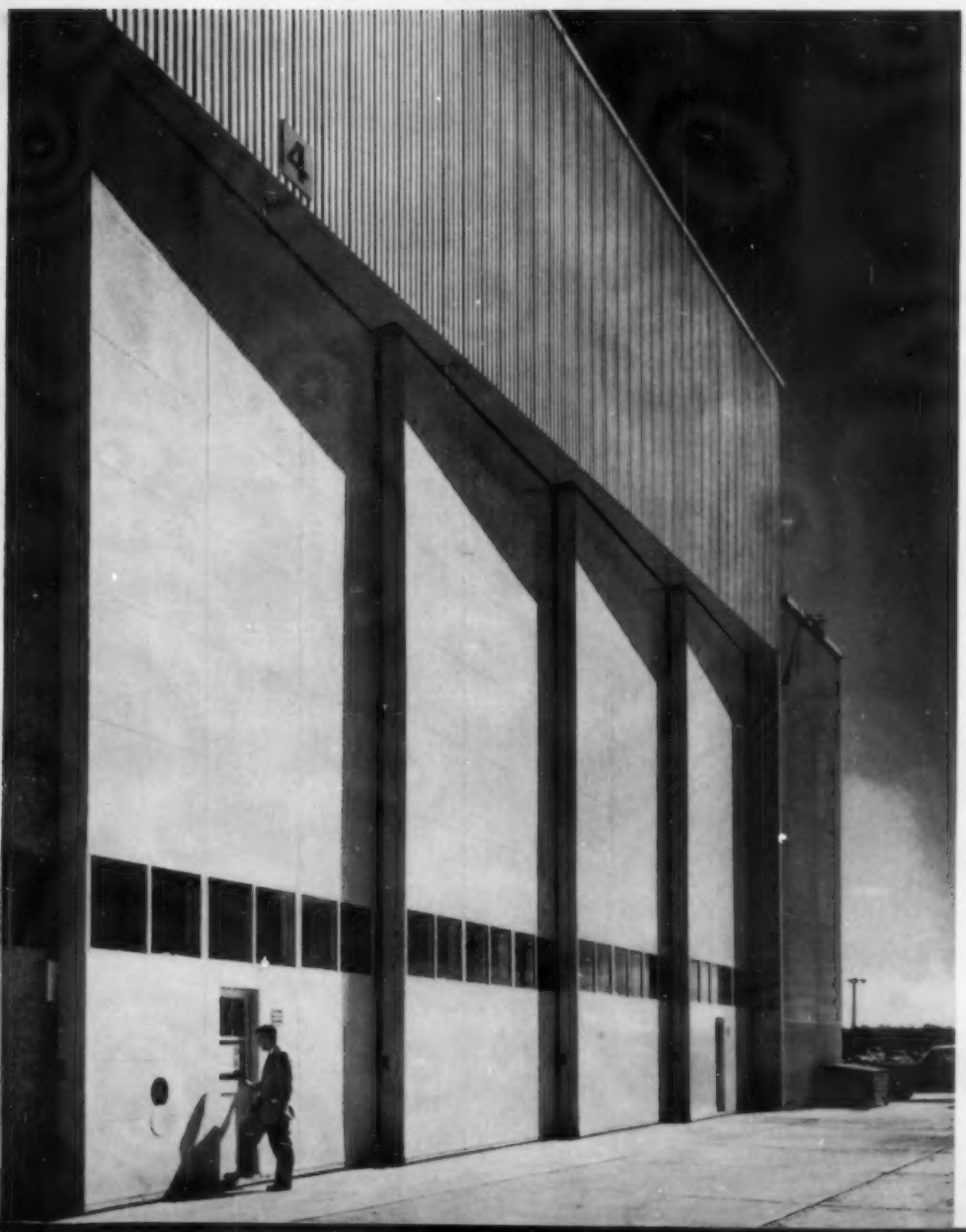


When the assembled planes are ready for flight testing, they move to this huge hangar and operations building, with two hangars in each of the wings of the courtyard plan. Joining the hangar wings is the two-story, flight-operations section of the building, containing rooms for company and Navy inspection; visiting pilots; stock room; receiving room; and garage (on the ground floor) and the chief pilot's room, a ready room, cafeteria, stock room, and space for electrical equipment and radar preparation and stock on the second floor. The control tower for the field occurs at the northeast corner.

The scale of the Grumman buildings is difficult to grasp. Each of the hangars in the building shown here is 140 ft wide and 150 ft deep by 40 ft to the under side of the trusses. The hangar doors are 140 ft wide by 36 ft high and are of the side-sliding type, with provision for motor operation so that each leaf can be operated separately. The doors, like the walls and roof, are insulated; and, further assisting noise exclusion, double-insulating glazing is used.

In the design of the Grumman plant, the architects and engineers wish special credit given to the following: Guy B. Panero, Consulting Engineer for Mechanical Work; Fred J. Biele, Consulting Sanitary Engineer; Albert Homer Swanke, Project Manager for the Architects and Engineers; William E. McKay, Plant Engineer for Grumman Aircraft Engineering Corporation; L. G. Defelice & Son, Inc., General Contractor for Runways and Railroad Work; Grove-Hendrickson, General Contractor for Buildings and Site Utilities; Bethlehem Steel Company, General Contractor for Structural Steel; and Combustion Engineering Super Heater, Inc., General Contractor for Boilers and Steam Plant Equipment.



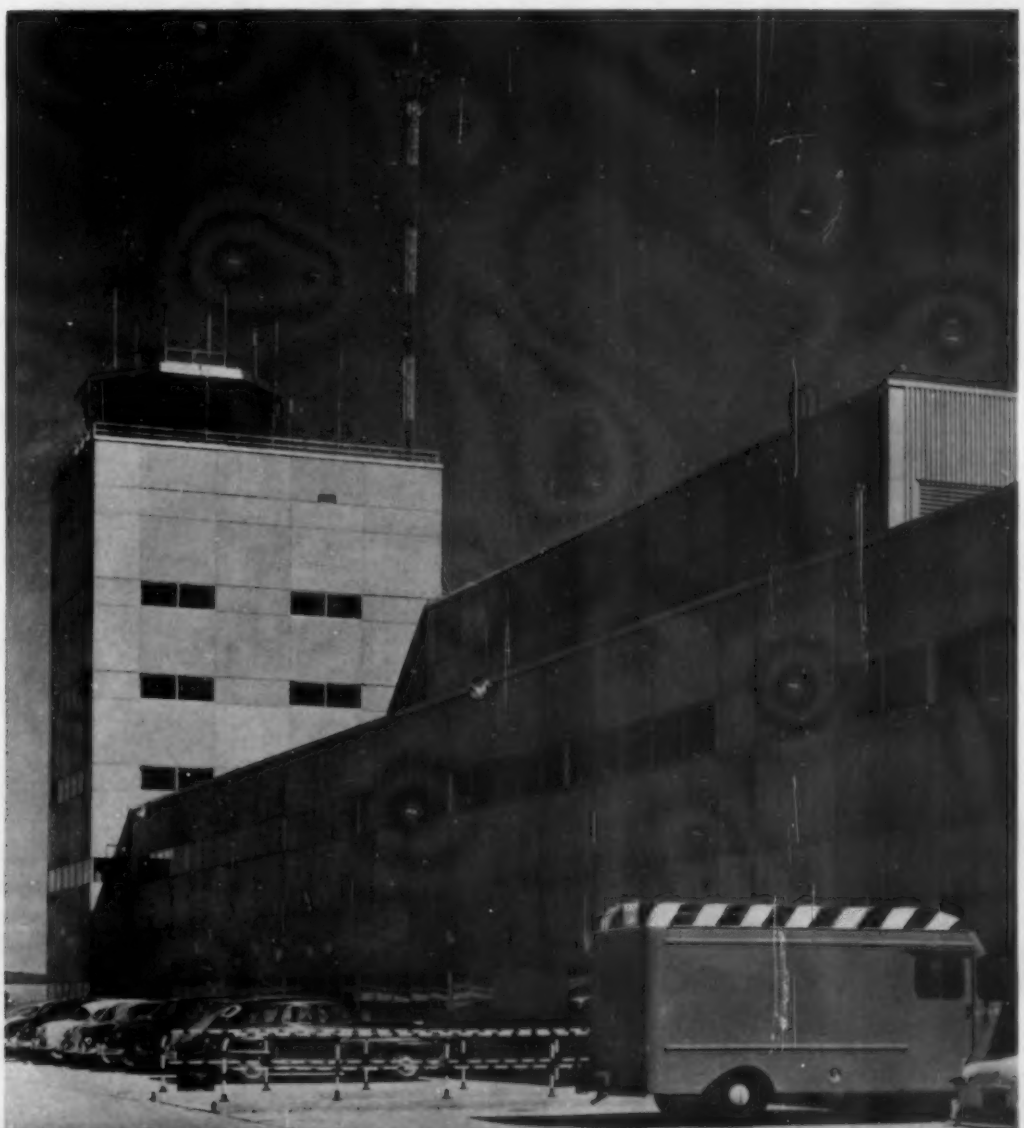


Two leaves of each of the 140-ft-wide hangar doors contain a pass door, and all leaves have glazing above eye level. To prevent freezing in winter, steam pipes are provided under the tracks of the doors. The doors are painted a brilliant yellow.

aircraft assembly plant

Coming around to the north side of the hangar and operations building, one sees the six-story control tower for the airfield. The height of the tower makes it possible to oversee the full length of both of the major field runways; and it was projected from the rest of the building so that the Chief Pilot (on the second floor) would have a view down both faces of the building, for optimum viewing of the movement of planes and automotive equipment. Construction, as elsewhere, consists of a steel frame with exterior walls of insulated, precast concrete panels.

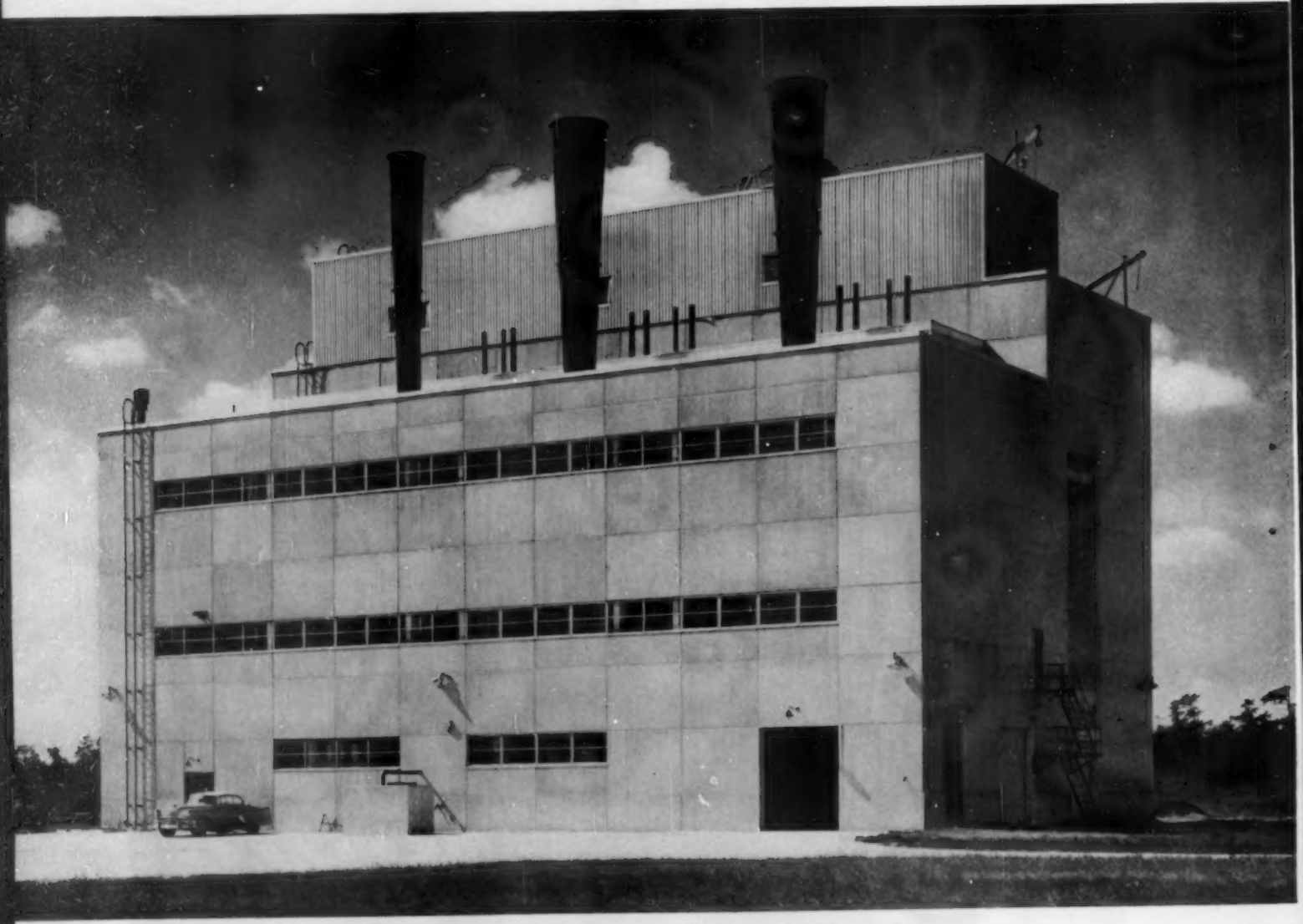
The control room is exceptionally well insulated for obvious reasons—acoustically treated; double glazing, separated by a 4-in. air space (outer pane, of heat-absorbing glass); acoustic pan ceiling; and heavy carpeting. Roof is of stainless steel to reflect heat; and stainless steel mullions were used to minimize obstruction to view.

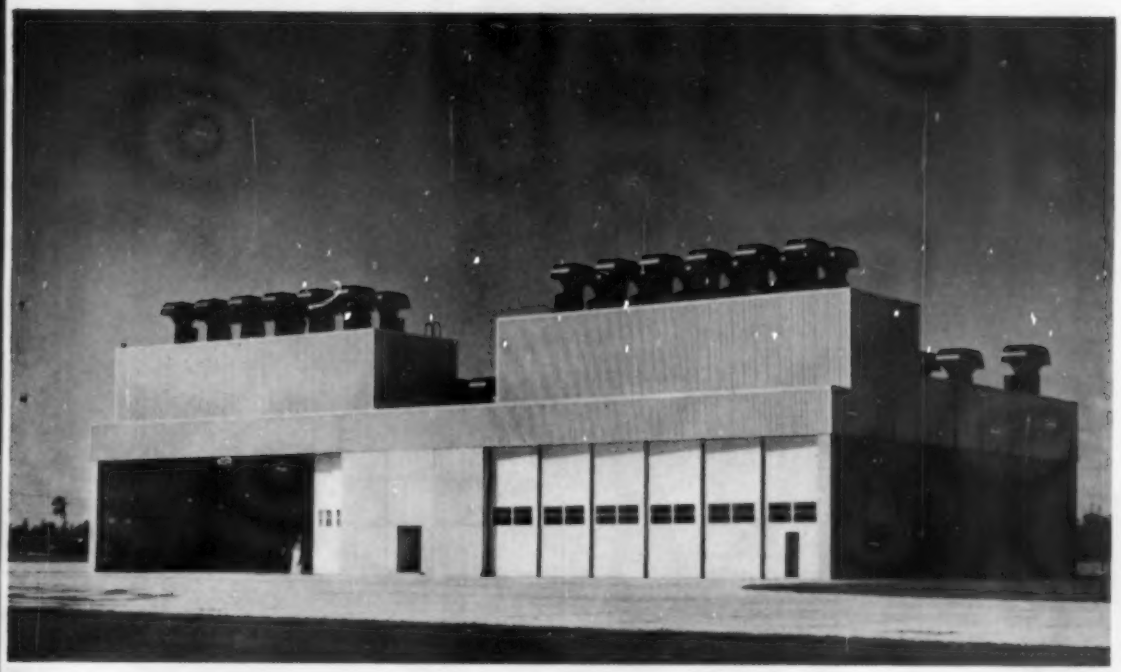


aircraft assembly plant

The steam plant (this page) *contains three water-tube boilers, two rated at 50,000 pounds of steam per hour and one at 25,000, all equipment to operate at 150 pounds per square inch pressure.*

The paint shop (acrosspage) *is for spray painting the planes as they come off the end of the assembly line and before they are towed or taxied to the hangar for flight testing. Ventilating system is so designed that air flows through the painting area at a velocity of 150 ft per minute.*





materials & methods

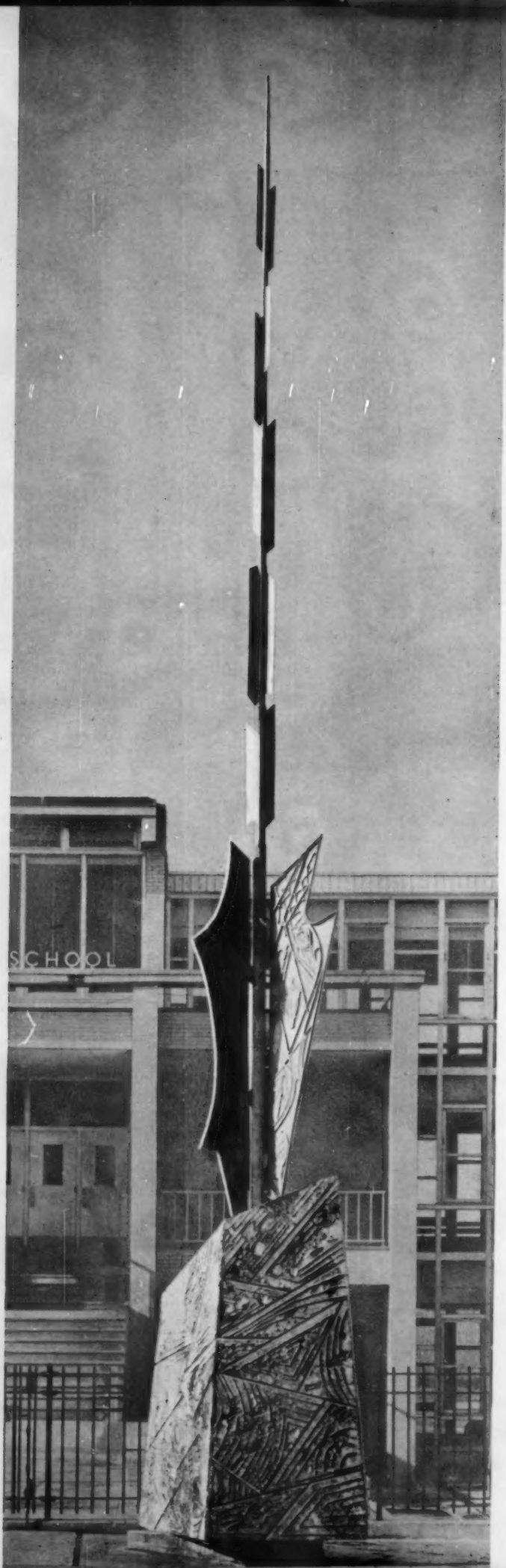
construction

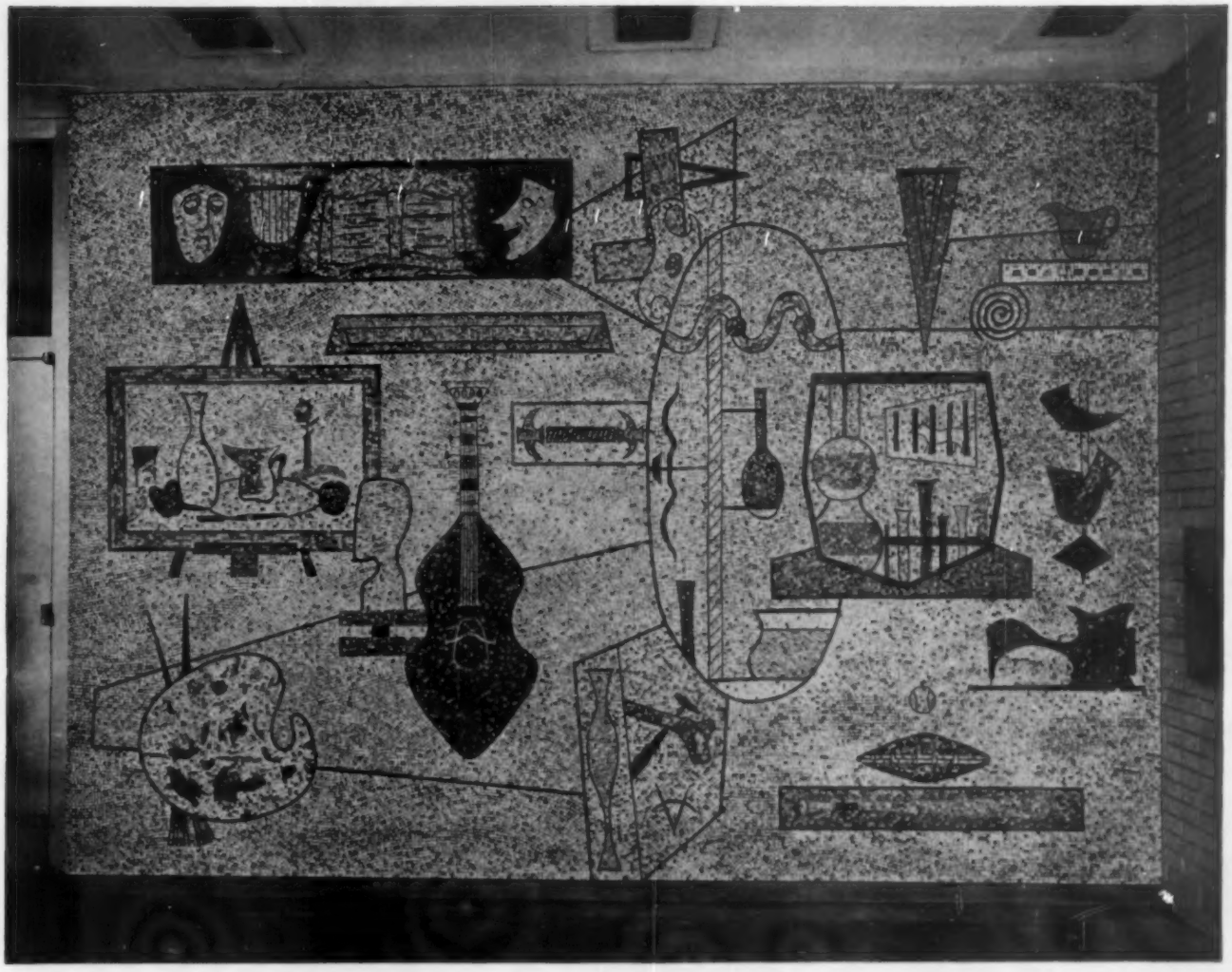
Foundation: reinforced-concrete grade beam at exterior walls and reinforced-concrete pedestals and footing at columns: cement—Alpha Portland Cement Company, Hercules Cement Corporation, Lehigh Portland Cement Company, Lone Star Cement Corporation, Whitehall Cement Manufacturing Company; reinforcing steel—Bethlehem Steel Company. **Frame:** structural steel—Bethlehem Steel Company. **Walls:** precast, insulated, reinforced-concrete panels supported by steel up to height of trusses—Precast Building Sections, Inc., associated with Marietta Concrete Corporation; prefab, insulated, aluminum siding welded to steel above trusses—H. H. Robertson Company; prefab, insulated, anodized-aluminum panels with galvanized-steel backing (Administration Building main façade)—Seaporcel Metals, Inc. **Floors:** reinforced concrete; steel deck (Hangar Tower)—H. H. Robertson Company. **Roof:** reinforced concrete (Administration Building); concrete plank—Concrete Plank Company; steel deck (Hangar Tower)—H. H. Robertson Company. **Floor surfacing:** wood-block flooring—Jennison-Wright Corporation; asphalt tile (office areas)—Kentile, Inc.; ceramic tile (toilets)—Sparta Ceramic Company; plastic-composition floor (Assembly Building kitchen, Hangar Building service bar)—The Kompolite Company, Inc. **Ceiling surfacing:** perforated fiberboard tile (Administration Building offices, corridors, cafeteria, medical department, lobby)—Simpson Logging Company; perforated cement-asbestos board (Assembly and Hangar Buildings, kitchens and pantry); perforated-aluminum acoustical units (Hangar Tower control cab)—Simplex Ceiling Corporation. **Roof surfacing:** built-up roofing topped with gravel; promenade tile (Hangar Tower)—Ludowici-Celadon Company. **Insulation:** thermal: glass-fiber insulation—Gustin-Bacon Manufacturing Company; glass-fiber roof insulation—Owens-Corning Fiberglas Corporation. **Roof drainage:** drains—Josam Manufacturing Company. **Partitions:** interior: cinder block and salt-glazed tile (toilets and kitchens)—Belden-Starke Brick Company; glazed terra cotta (Administration Building lobby)—Federal Seaboard Terra Cotta Corporation; asbestos-cement board—The Ruberoid Company; steel toilet partitions—Henry Weis Manufacturing Company, Inc. **Windows:** sash: fixed and projected aluminum—Cupples Products Corporation, awning type (Gate House)—Universal Window Corporation, special stainless steel (Hangar Tower control cab)—Allied Bronze Company; glass: insulating (Administration Building and Hangar Tower), heat-absorbing (Hangar Tower control-cab exterior), plate (Hangar operations and control-cab interior)—Libbey-Owens-Ford Glass Company; skylights—Fisher Skylights, Inc. **Doors:** interior: hollow-metal flush—Superior Steel Door & Trim Company, Inc., metal-clad sliding—The Richmond Fireproof Door Company; overhead: steel roll-up doors—The J. G. Wilson Corporation; hangar doors—International Steel Company; entrance doors: extruded-aluminum sections—Allied Bronze Company; elevator doors: freight and passenger—The Peelle Company, passenger (Hangar Tower)—The W. S. Tyler Company. **Hardware:** lock sets, door closers, butt hinges, and panic bolts—Russell & Erwin Division of The American Hardware Corporation. **Paint & stain:** exterior and interior—Paint Division of Pittsburgh Plate Glass Company.

equipment

Kitchen: ranges and boilers—Vulcan-Hart Manufacturing Company; compartment steamer and steam chef—Cleveland Range Company; stainless-steel refrigerators—Traulsen & Company, Inc.; dishwasher and automatic conveyor—Toledo Scale Company; soda-fountain equipment (Hangar Building luncheonette)—Bastian-Blessing Company; spray-type dishwashing machine (Hangar Building luncheonette)—Universal Dishwashing Machinery Company. **Public address system:** Radio Corporation of America (Administration Building, Hangar Building, Guard House control room). **Elevators:** hydraulic freight and passenger elevators—Burwak Elevator Company, passenger elevator (Hangar Tower)—The W. S. Tyler Company; cranes (Assembly and Hangar Buildings)—The Industrial Equipment Company, Inc. **Lighting fixtures:** industrial fluorescent (manufacturing area) and flush-louvered fluorescent (office and lobby areas)—The Miller Company. **Electrical distribution:** switchgear—Westinghouse Electric Corporation; substations and panelboards—Federal Pacific Electric Company; wire & cable—General Cable Corporation; conduit—Spang-Chalfant Division of The National Supply Company, Walker Brothers; wiring devices: switches and receptacles—Harvey Hubbell, Inc., Russell & Stoll Company, Inc., Crouse-Hinds Company. **Plumbing & sanitary:** water-closets and lavatories—American Radiator & Standard Sanitary Corporation; watercloset supports—J. A. Zurn Manufacturing Company; toilet seats—C. F. Church Manufacturing Company; water heater—The Patterson-Kelly Company, Inc.; flush valves—Sloan Valve Company; shower stalls—Fiat Metal Manufacturing Company. **Heating:** type: steam distributed underground; boilers—Combustion Engineering-Superheater, Inc.; convectors, radiators, and piping—American Radiator & Standard Sanitary Corporation; unit heaters and roof ventilators—American Blower Corporation; pneumatic controls—Johnson Service Company. **Air conditioning:** type of unit: window units (office areas)—American Radiator & Standard Sanitary Corporation; refrigerant: Freon 11 and 12, well water; compressors: reciprocal (Hangar Building) and centrifugal (Assembly Building)—Worthington Corporation; diffusers—Tuttle & Bailey, Inc.; filters—American Air Filter Company, Inc.; pneumatic controls—Johnson Service Company; blowers and cooling coils—American Blower Corporation; roof ventilators—Davidson Fan Company.

related design fields





symbols of modern education

Two works of art expressive of the goals of modern youth and education adorn the entrance of General George W. Wingate High School, largest of the new public schools being built in Brooklyn, New York. The sky-pointing metal sculpture, "Aspiration," *(acrosspage)* by Gwen Lux stands in front of the building and at the top of the entrance steps is the large mosaic panel, "Tools of Education," *(above)* by Max Spivak.

Warm friends of contemporary art are the architects of this much-discussed "banjo shaped" school, Kelly & Gruzen, whose buildings of recent years have been designed to incorporate the works of some of our most talented sculptors and painters. The sculpture and mosaic shown here were both commissioned by the architects and won approval of the New York Board of Education and Municipal Art Commission.

The 30-foot steel shaft of the Lux sculpture represents the soaring hopes of youth and the three large bronze fins are decorated with symbols of celestial bodies, of air currents, and of student activities. The concrete base from which the sculpture springs was poured in a wood form, in which some of the markings had been ground and to which fossil forms had been fastened. The base represents the elemental origin of life on earth.

Venetian-glass tessarae ranging through some 500 hues were employed by Spivak for his mosaic mural, 10 feet high and 14½ feet wide, in the entrance loggia. The symbols of artistic and scientific pursuits are brilliant, in effective contrast to the light background harmonizing with the general exterior color scheme. The mural suggests the broad scope of curriculum and student interests in a modern educational plant. *Photos: Gottscho-Schleisner*

aluminum dome

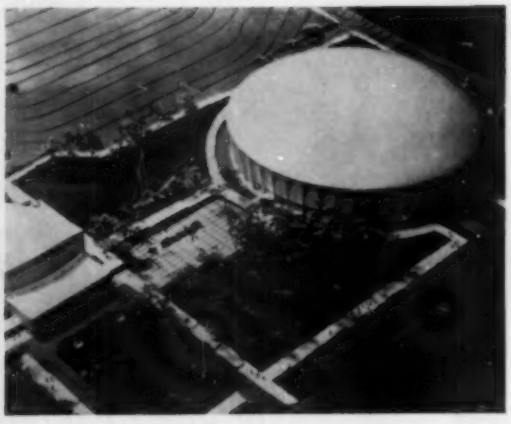
Nearing completion in Charlotte, North Carolina, this 332-ft diameter coliseum for sports events and exhibitions is roofed by an aluminum-sheathed dome, which covers an area of two acres, yet requires only 48 columns on its circumference for support.

The dome is basically an arched steel web supported by a center compression ring and a circumferential tension ring. This structural system is "considered to be the most economical roof framing as well as enclosing a greater sq ft area than any other perimeter" (*"Engineering Forecast," January 1953 P/A*).

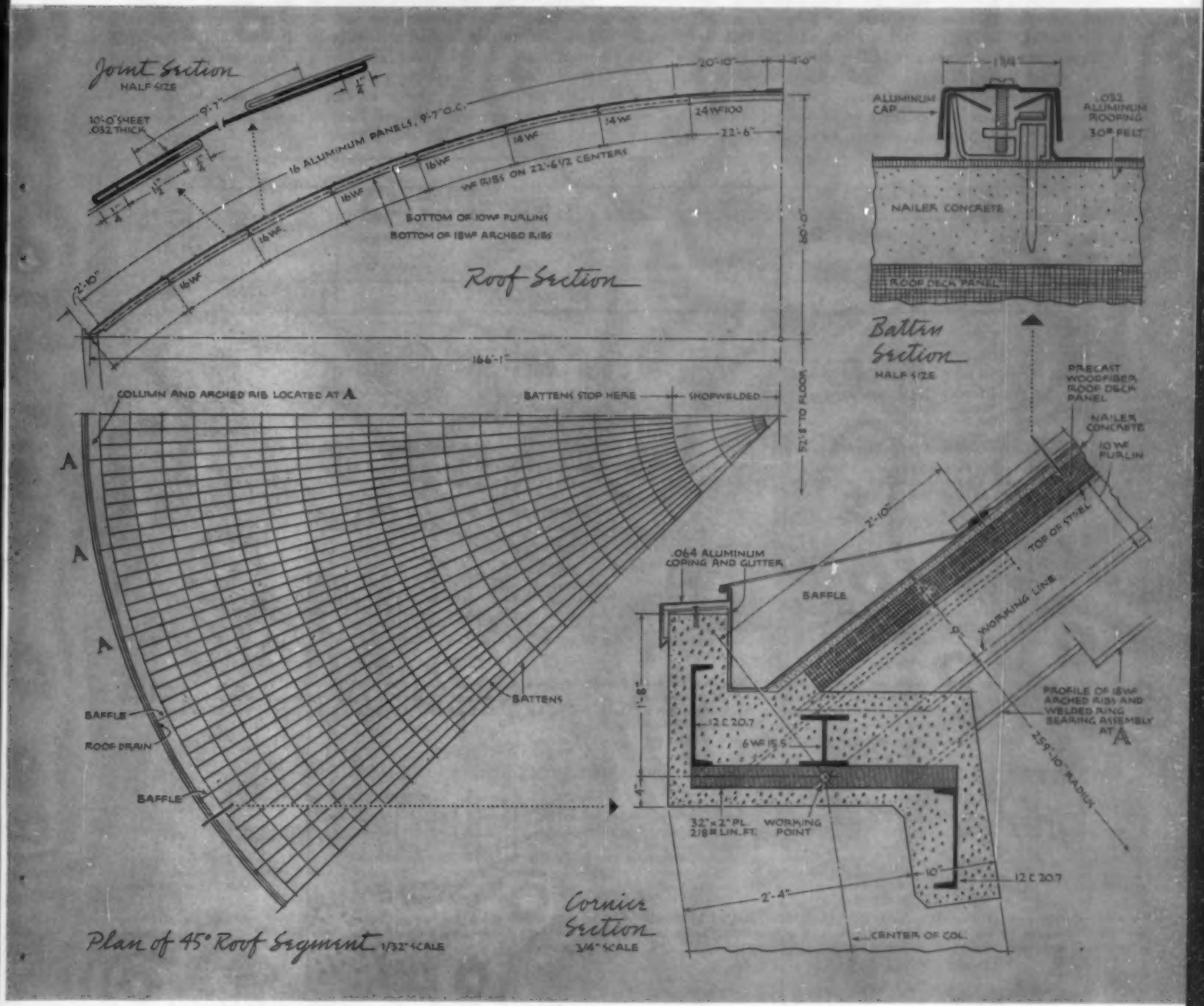
For erection purposes, the 24 WF compression ring, 45 ft in diameter, was mounted on scaffolding; the tension ring, 32″ x 2″ and 1000 ft in circumference, was placed on top of columns. Both rings were fabricated of welded-steel. Arched ribs were ground welded and individually positioned on the two rings in three-rib groups. Initially, one group was placed in each quadrant to insure a balanced load, since the prefab assemblies weighed 14 tons each. Steel WF members, framing into ribs in concentric circles 22-½ ft apart, support 10 WF purlins. On this framework were laid 3″ precast-woodfiber planks, topped by a 1″ layer of poured concrete. An overlay of 30-lb tarred roofing felt is rendered watertight and maintenance-free by a covering of aluminum sheet. The entire roof assembly, which is designed to withstand winds of 125 mph, rests on concrete columns, 53 ft high, sloped outward on top to keep rain off the exterior wall. Precast-concrete panels are used for exterior wall above spandrel beam, which supports seating. Remaining area between columns will be glazed.

Aluminum sheeting, .032″ thick, provided the solution for a lightweight roof covering—it weighs only one lb per sq ft. Topping the dome, a one-piece cap, 60 ft in diameter, is made of welded-aluminum sheet, while the rest of the 3650 pieces are seamed in a manner which allows for ample expansion and contraction *(see details acrosspage)*.

Architects and Engineers for the coliseum were A. G. Odell, Jr. & Associates of Charlotte; Consulting Engineers were Severud-Elstad-Krueger of New York. Aluminum sheeting was supplied by Aluminum Company of America; Aluminum Structures, Inc., fabricated and installed the sheeting.



Construction photos show application of aluminum roof sheeting and the completed dome (lower right *and* above). *Coliseum, accommodating up to 13,500 persons, as well as an auditorium seating 2,500, will constitute eight-acre civic project, pictured in photo of model* (above right).

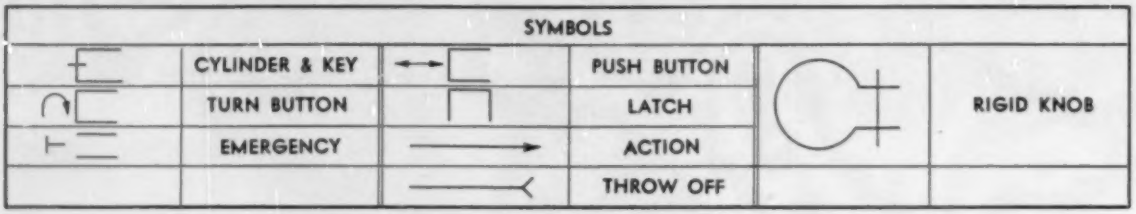


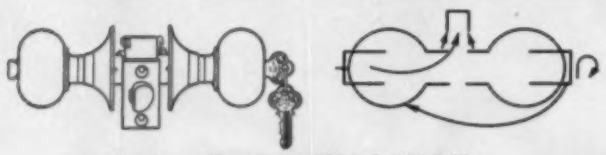
One-eighth plan of roof is drawn above; center point rises 113 ft above floor level, sloping down to height of 53 ft at perimeter. Detail of coping also shows steel plate, which contains thrust of dome. Aluminum sheeting is joined laterally by standard flatlock seams; joints radiating from center are specially designed batten seams.

brass locks: installation, operation, and specification

Selection and specification of hardware is an area of architectural activity too often treated casually. Lock sets, in particular, have today so many *functions*—methods of operation, keying, and control, on one or both sides of the door—that their specification can become extremely complicated. To clarify these basic functions for the architect, The American Hardware Company, manufacturer of the Russwin and Corbin lines, has prepared for P/A the diagrammatic chart which appears on these pages. The Editors believe that this should be useful specification data for the architect's office.

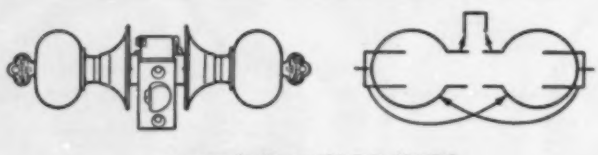
Materials used in the manufacture of cylindrical lock sets are of major importance. As in the case of any product specified, the criteria of strength, appropriateness, durability, and appearance are the controlling ones. Hardware manufacturers today recommend the copper alloys—brass and bronze—for quality installations. The reasons are: the copper alloys have a solid "feel" in the hand; their weight provides a sense of security when grasped; these metals lend themselves to close-tolerance manufacture and plating with other materials; moving parts will not seize or gall; service will be long-term without maintenance nor replacement. Finally, of course, the warm tones of copper, brass, and bronze are appealing. Except for atmospheres where salt or high humidity might corrode ferrous parts, certain of the interior working parts can well be made of steel. Steel and brass are good "bearing pairs"; there is no danger of corrosion caused by the galvanic action of dissimilar metals.





front or office door/ 161-A-2, 161-A-4*

Latch bolt operated by key from outside at all times and by knobs from either side except when outside knob is locked by turn button in inside knob/ Latch bolt automatically deadlocks when door is closed.

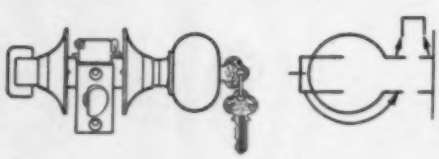


communicating/ 161-F-2, 161-F-4

For connecting doors/ Latch bolt operated by knobs from either side except when key in either knob locks opposite knob/ Latch bolt automatically deadlocks when door is closed/ To prevent accidental lockout this lock should not be used on doors between rooms which have no other entrance.

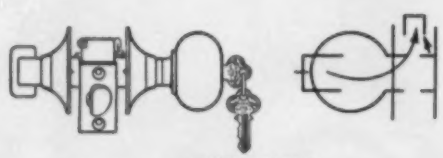
rest room or public station/ 161-T-2, 161-T-4*

For dormitory bedrooms or public rest-room doors/ Latch bolt operated by key from outside at all times and by knobs from either side except when outside knob is locked by pushing in button in inside knob/ Turning key outside, knob inside, or closing door releases locking button/ Outside knob can also be locked by full turn of key from outside/ Latch bolt automatically deadlocks when door is closed.



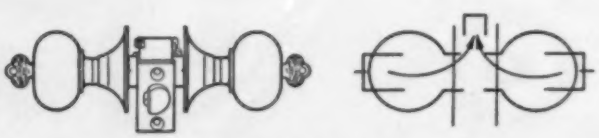
closet

For closet doors which require key operation/ Latch bolt operated by thumb turn from inside at all times and by knob from outside except when outside knob has been locked by full turn of key/ Latch bolt automatically deadlocks when door is closed.



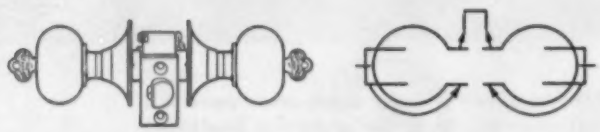
utility closet

For utility closets, pipe or wire shaft doors, etc./ Latch bolt operated by thumb turn from inside and by key from outside; outside knob always rigid/ Latch bolt automatically deadlocks when door is closed.



fixed knob/ 161-W-2, 161-W-4*

For passage doors which are always locked/ Latch bolt operated by key from either side; both knobs always rigid/ Latch bolt automatically deadlocks when door is closed.

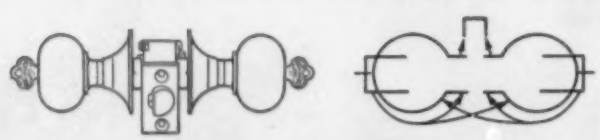


communicating/ 161-S-2, 161-S-4*

Latch bolt operated by knobs from either side except when key in either knob locks its own knob only/ Latch bolt automatically deadlocks when door is closed.

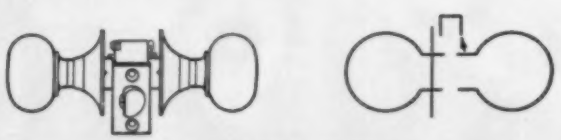
closet latch

For closet doors that do not require locking/ Latch bolt operated by knobs from outside and thumb turn from inside at all times.



store/ 161-G-2, 161-G-4*

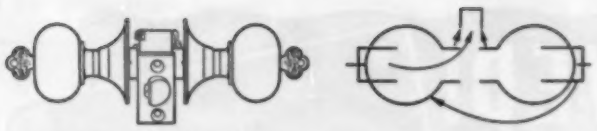
For store-entrance or communicating doors/ Latch bolt operated by knobs from either side except when both knobs are locked simultaneously by full turn of key in either knob/ Latch bolt automatically deadlocks when door is closed.



exit/ 161-NX-2, 161-NX-4*

For doors used for exit only/ Latch bolt operated by knob from inside at all times; outside knob always rigid/ Latch bolt automatically deadlocks when door is closed.

* Federal Specification FF-H-106a Amendment #1.

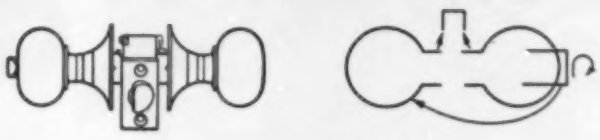


entrance or corridor/ 161-C-2, 161-C-4°

Latch bolt operated by key from outside at all times and by knobs from either side except when outside knob is locked by key in inside knob/ Latch bolt automatically deadlocks when door is closed.

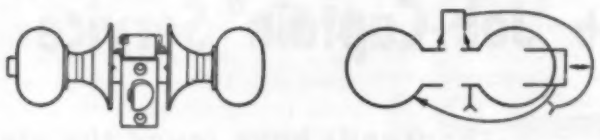
utility or store room/ 161-D-2, 161-D-4°

Latch bolt operated by knob from inside and by key from outside; outside knob always rigid/ Latch bolt automatically deadlocks when door is closed.



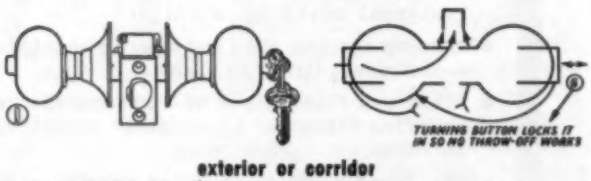
exit/ 161-Q-2, 161-Q-4°

For doors used mostly for exit where entrance is not required when locked/ Latch bolt operated by knobs from either side except when outside knob is locked by turn button in inside knob/ Latch bolt automatically deadlocks when door is closed.



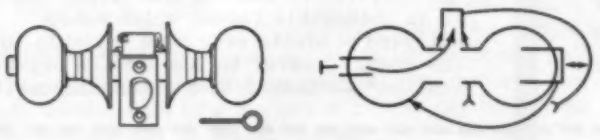
exterior/ 161-P-2, 161-P-4°

For doors that require locking only when room is occupied/ Latch bolt operated by knobs from either side except when outside knob is locked by pushing in button in inside knob/ Turning inside knob or closing door releases locking button preventing accidental lockout/ Latch bolt automatically deadlocks when door is closed.



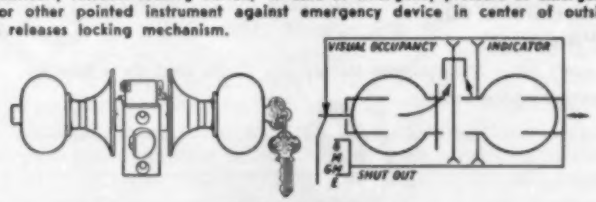
exterior or corridor

Latch bolt operated by key from outside at all times and by knobs from either side except when outside knob is locked by pushing in button in inside knob/ Turning key outside or knob inside releases locking button; closing door does not release locking button/ Locking button has slot in head and can be fixed in locked position by turning it with coin or screw driver/ Latch bolt automatically deadlocks when door is closed.



bathroom/ 161-L-2, 161-L-4°

Latch bolt operated by knobs from either side except when outside knob is locked by pushing in button in inside knob/ Turning inside knob or closing door automatically releases locking button/ In case of emergency pressure of emergency key or other pointed instrument against emergency device in center of outside knob releases locking mechanism.



apartment house

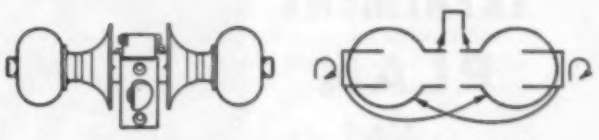
For use on corridor doors/ Latch bolt operated by knob from inside and by key from outside; outside knob always rigid/ Pushing in button in inside knob shuts out all keys except emergency key and projects visual occupancy indicator in face of cylinder; turning inside knob or closing door automatically releases locking button and shutout features and retracts indicator/ Latch bolt automatically deadlocks when door is closed.

classroom or vestibule/ 161-R-2, 161-R-4°

Latch bolt operated by knobs from either side except when outside knob is locked by key in outside knob/ Latch bolt automatically deadlocks when door is closed.

passage/ 161-N-2, 161-N-4°

For any door that does not require locking/ Latch bolt operated by knobs from either side at all times.



communicating/ 161-M-2, 161-M-4°

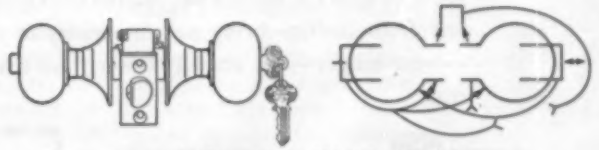
For connecting doors/ Latch bolt operated by knobs from either side except when turn button in either knob locks opposite knob/ Latch bolt automatically deadlocks when door is closed/ To prevent accidental lockout this lock should not be used on doors between rooms which have no other entrance.

office/ 161-B-2, 161-B-4°

For use on office doors/ Latch bolt operated by key from outside at all times and by knobs from either side except when outside knob is locked by pushing in button in inside knob/ Turning key outside or knob inside automatically releases locking button; closing door does not release locking button/ Latch bolt automatically deadlocks when door is closed.

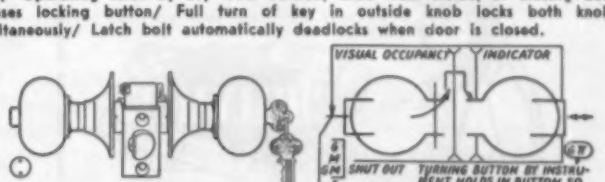
service station/ 161-E-2, 161-E-4°

For rest-room or public-station doors/ Latch bolt operated by key from outside at all times and by knobs from either side except when outside knob is locked by pushing in button in inside knob/ Turning key outside, knob inside, or closing door automatically releases locking button/ Locking button has spanner holes in head and can be fixed in locked position by turning it with spanner key/ Latch bolt automatically deadlocks when door is closed.



communicating suite/ 161-U-2, 161-U-4°

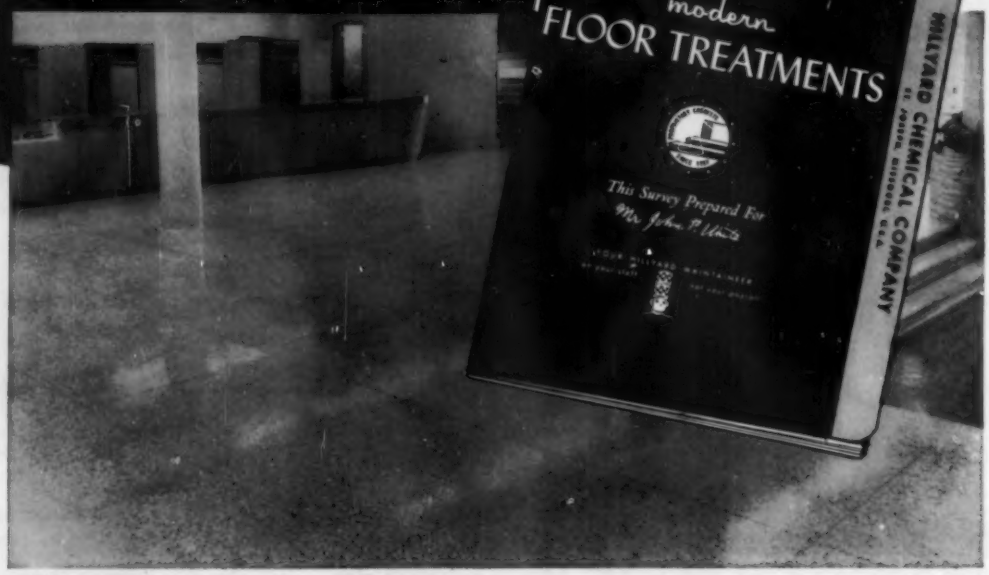
For communicating bathroom doors in hotels/ Latch bolt operated by knobs from either side except when outside knob is locked by pushing in button in inside knob/ Operating latch by key from outside, knob from inside, or closing door releases locking button/ Full turn of key in outside knob locks both knobs simultaneously/ Latch bolt automatically deadlocks when door is closed.



hotel/ 161-H-2, 161-H-4°

Latch bolt operated by knob from inside and by key from outside; outside knob always rigid/ Pushing in button in inside knob shuts out all keys except emergency key and projects visual occupancy indicator in face of cylinder/ Turning inside knob or closing door automatically releases locking button and shutout features and retracts indicator unless button has been fixed in locked position by turning with special spanner key/ Latch bolt automatically deadlocks when door is closed.

SURVEY PROVED!



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by Ben John Small

spec small talk

conk blox

Say, did I mention to you that I attended (and spoke at) the 35th Annual Convention, last January, of the National Concrete Masonry Association in Cleveland, Ohio? Wasn't that a sneaky introduction? Subtle as a landslide. What do you suppose they talk about at these shindigs? More members? (They have 800 of them.) More business? (It is at an all-time high: $400 millions.) Ways and means of improving concrete masonry unit products? Indeed, yes! I never saw so many variations of blocks. There were blocks with such dense aggregates as sand and gravel, crushed stone and air-cooled slag, and with such light aggregates as cinders, expanded slag, granulated slag, expanded shales and clays, pumice, scoria, vermiculite, perlite, diatomite, and heaven knows what. Then there are blocks which have been faced in a variety of ways, such as the special-finish units having faces glazed to produce an allegedly permanent surface requiring no paint or other treatment (they say it is stainproof, color-fast, free of hair lines, chemically resistant to acids, alkalies, and doubting architects). Also in the running is a ceramic glaze. It is claimed that this baby will withstand hydrostatic pressure of 15″ of water without any signs of peeling. Then there are the "locked-in-the-block" coatings developed by the paint industry. I could go on and describe units in many colors and surface textures, but I won't because my feet gave out at this point. Barely made the plane back home.

brain washers

On the train the other day, I got into a friendly hassle—well, let's just call it a discussion—with my neighbor, Arthur Morgan, of Erdos & Morgan. I had just received a questionnaire from them and I wanted to know why they were so interested so persistently in architects. "It's because you specify," said Morgan. "That's why you're such important people." "Isn't it because we translate music into stone, like the man said?" I asked. "No," Morgan shook his head, "it's because you specify umpteen billion dollars worth of building materials." "Is it perhaps because I've worked for many years on *streamlining* specifications?" I ventured timidly. The marketing man was blunt: "I don't give a hoot what the wind resistance of your specification is; you can round it off or cut it square. Architects get questionnaires because they specify." Once back at my office, subdued and obedient, I hauled out and answered the brainwashing questionnaire . . . like the man specified.

aluminum survey

Many American architects are using more aluminum in school buildings than they realize, preliminary findings of a nationwide survey of leading architects indicate. More than 150 architects who are currently responsible for the design of about 80 percent of America's public school buildings were interviewed in connection with Kaiser Aluminum & Chemical Corporation's extensive study of present and potential uses of aluminum in school construction. Typical was the comment of a Philadelphia architect, who stated flatly that he doesn't specify much aluminum. But then, after a few moments' thought, he rattled off some 20 building components for which he almost always specifies that metal. Across the nation, in San Francisco, another prominent architect made the same initial comment; but after checking through a list of applications, expressed astonishment at the large amount of aluminum he is using. Similar views were recorded in virtually all sections of the United States by representatives of the Los Angeles architectural-engineering firm of Daniel, Mann, Johnson & Mendenhall, who were conducting the survey on behalf of Kaiser Aluminum. The interviews, now concluded, have laid the groundwork for further studies designed to establish as far as possible where aluminum products may make significant contributions to school architecture, building, and equipment. The studies will require several months to complete.

In the course of the interviews, each architect was presented with a list of 130 present applications of aluminum in schools. He was then asked to indicate which ones he "always," "sometimes," or "never" specifies, and which ones (if any) he is unfamiliar with. Frequently, after expressing surprise at the number of applications, the architect checked the list and found many familiar uses of aluminum. In fact, it was found that one third of the applications were specified, sometimes or always, by a majority of the architects. Architects are as individual in their attitudes toward materials as they are about design concepts, the interviewers concluded. In no case was there unanimity among the architects—in relatively few cases even general agreement regarding the use of aluminum in a specific application. For example, while 86 percent "never" specify aluminum for fencing, 10 percent "sometimes do" and four percent "always do." On the other hand, 89 percent "sometimes or always" specify aluminum for hand and pipe rails, but 11 percent, "never." The architects are almost evenly divided on some applications. This is true, for example, of gutters, downspouts, solar shading, and awning windows.

The interview phase of the survey completed, members of the Daniel, Mann, Johnson & Mendenhall staff are now coordinating the data obtained and making detailed studies of such matters as cost, durability, workability, ease of construction and upkeep, heat control, light control, acoustics, color and structural design, all with reference to aluminum and other available materials of construction.

access doors

Access doors are a pain in the neck. Access doors are orphans. Access doors wander about in that no-man's-land, so despised by those who have to specify them, particularly in the case of multiple contract projects. Who furnishes and installs them? The Contractor for General Construction? He howls, "How am I to know where the separate contractors for plumbing, heating and ventilating, and electric work want them? I have a limited time to get my bid in—and certainly not enough to conduct a research project!" So you specify them in each of the separate contracts. Are they all, in the final result, consistent? Usually not. Listen lads, button this one down carefully. Ask Karp Metal Products Company of New York to send its little old diatribe on the subject, including its story on the new acoustical access doors, Type DSC-210. You'll love me for this tip.

drafting room efficiency-2:

by Hans W. Meier*

Have you ever started to say something and then stopped halfway through, realizing that what you were trying to say could have been more carefully thought out before you tried to say it? Of course you have; we all have. Multiply that by the man-hours invested in a set of working drawings and specifications and you get a rough idea of the importance of *pre*planning drafting room production.

How many jobs do you care to remember that started out to be 10 sheets and ended as 15, or started out to be 50 sheets and ended with twice that many? It would seem, objectively, that with all your drafting room experience you should have been able to estimate closer than that. Surely you could *if you could afford to take the time.* Yet, the few hours involved may make a lot of difference later, both in man-days of wasted effort and in confusion someplace in the drawings.

production analysis

Production people in industry have a technique of analyzing a production on the basis of what are familiarly known as the "six W's": "what exactly are we trying to do, why should it be done, where is the best place to do it, when is the best time to do it, who is needed to do it, and what is the best way to do it?" As lost motions are weeded out, so are complete processes at times. *An objective assessment of production processes has discovered many an operation kept on more from inertia and lack of imagination than from any effective contribution to the finished job.*

We have a growing counterpart of that in our drafting rooms today. Naturally, no one has to sell us on "planning." Planning is our profession. But planning our own production is a refinement we might not bother with except that competition, and the desire to be of increasing service, are forcing us to an increased production efficiency. There have been a great many cobwebs brushed away lately by such penetrating articles as Guy G. Rothenstein's "Todays Working Drawings" (February and March 1950 P/A) and the "Streamlined Specifications" of Ben John Small.

programming

Among many similar techniques of production planning, one known as "programming" is used by some firms. It goes something like this: before any sketches are made or any general design concepts established, all the known factors about the job are assembled and written up in a standard form. Such things as the purpose of the buildings involved, topographical characteristics, present ideas of budget and type of construction, design criteria to be followed, any major consideration which cannot be lost sight of—all of these are compiled as briefly and explicitly as skill and experience can do it. This is labeled "Preliminary Program as of (date)" and each person who has anything to do with the job through the design phase is expected to be thoroughly familiar with the contents. As the job progresses through planning and study, memoranda are made (and dated) showing why certain things have been added, or expressing more advanced concepts of the work to be done.

When the project is ready for working drawings, the program is added to again. This time one man—chief draftsman, production manager, or job captain—sits down with the program and the approved preliminary drawings to investigate every part of the project for drafting labor that will be involved. He has to be a high-caliber man. His job as an estimator of drafting labor is as important to the firm as though he were estimating building costs for a builder. He must be armed with a knowledge of how many details will be required to show the conditions involved and he must have some sort of time-standard to know how many men and how long it will take for drafting. Wishful thinking has no value here! "Round figures" have almost as little value. Here the chips are down—the intention is to establish a production schedule from which those people vitally concerned in the production can know when to be ready to work on it. Engineers, draftsmen, specification writers, checkers, and estimators all depend on that schedule to keep their parts of the team in step with the others.

Several things appear to be accomplished by this. First, the very act of listing all pertinent data is an orderly, disciplined approach to the planning problem. It frequently points up gaps in the information at hand, gaps which can result in costly revisions later. It is conducive to ordered and disciplined planning. Second, if more than one person is working on the problem in the design stage it is of proved importance for each person to be familiar with the *total* problem. The program, containing all known data about the job, is available as common source material. Third, it provides a job history which is of utmost importance in the planning of future projects.

Of all preplanning steps, the *production schedule* is by far the most difficult to establish accurately and yet it is the effort most likely to save drafting dollars. It is also the part whose value is hardest to prove, since no two drafting projects are ever identical and therefore no direct comparison of production costs can be made. But drafting rooms in some parts of the aircraft industry have been maintaining a preplanned production schedule even in the design of aircraft. And they have been doing this for years—successfully. They refer to what Lord Kelvin,

* *Chief draftsman for Benedict, Beckler & Kocher, Architects-Engineers, Downey, Calif.*

the great physicist, once said: "You only begin to know your subject when you learn how to measure it." Any budget for drafting is based on some assumption as to the complexity and cost of the drafting. If this assumption exists at all, they say, then we should be able by experience, knowledge, and perceptive observation, to make it into a more accurate estimate.

time-standards

Time-standards are units by which one generally can predict how long it will take to perform a certain piece of work. They are the product of careful recording of actual time used on previous, similar work, plus an insight into the differences between previous work and the job at hand.

The repetitive nature of mass-production has brought "time-study" to considerable eminence in industry. Once it brought chaos as well! That was in the early days of scientific management when the time records of the fastest men were used as the standards for everyone to produce by. Now it is recognized that differences exist among human abilities. Not only may one man have a particular ability with turning lathes and another man have a particular ability with horses, but varying shades of ability exist among all the lathe operators and among all the horse handlers, and among all the other crafts and specialties which make up our economy. Now certain lower and upper limits of ability are specified and the average of those abilities used as the standard. Along with "motion-study," which tends to overcome lost motions on the assembly line, time-study has contributed immensely to industry's being able to meet, and beat, stiff competition.

In the drafting room, our custom-made product gives us less chance to establish time-standards. How are we going to compare the drafting time of a residence to the drafting time of, say, a theater? Projects are conceived, designed, drawn up and built; sometimes with variations, often with a new theme, yet always played on the same instrument. So there is a pattern established which can certainly be reduced to something better than an assumption.

Those of us who have worked on time-standards in the drafting room have had to invent techniques to fit our own situations. Knowing that what we were trying to do was to maintain an accurate record of how long it took to do certain drafting, we have tried various schemes. One method has been to break any large drafting project into several components, giving each a decimal part of the job number. Thus, if the job number is 5425, then site work becomes 5425.1, foundation drawings become 5425.2, floor plans 5425.3, etc., on through door and window details, schedules, specifications, and the total job. These decimalized numbers are then entered on the time card in place of the regular job number and a tabulation is made for future estimating purposes. Those who use the system say it works well, as long as it is used for projects of a fairly similar nature. One firm specializing in schools uses the system almost exclusively.

Another firm uses an amazingly simple (though hardly as accurate) technique. It divides the total man-hours logged against drafting specific jobs, during the period of a year or more, by the total number of finished sheets of working drawings produced in that time for those jobs. This comes up with an average *man-hours per sheet* of drawings which can be used to estimate drafting costs in advance. This system may work adequately if the total number of sheets to be drawn is also worked out precisely at the same time. It must still be hard to predict, by this method, the balance of junior to senior men needed or to pin down just where costs get out of hand.

My own method is slightly different from either of these. Naturally, I am convinced of the value of preplanning. In fact, I have not yet found the limit, in a large project, where preplanning ceases to be of value. I now break the job down into sequences of operation—plans, elevations, sections, details of various kinds, schedules, and the like—and, combining a study of the present job with records of previous jobs, the department heads and I estimate the number and kind of *man-days* needed. Alongside the *estimate* for each sequence is another column titled *actual*, left blank until the sequence has been completed in the drafting room. A tabulation is then made and the actual man-days entered. This record of the *estimated* and the *actual* time spent on past jobs helps establish a fairly sound method of predicting just what is going to be needed on new jobs. We have found our more recent estimates coming closer and closer to actual results.

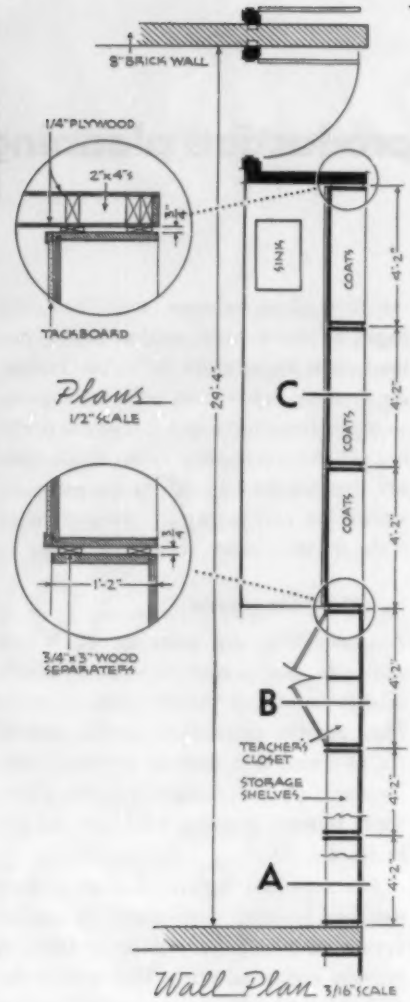
effective control

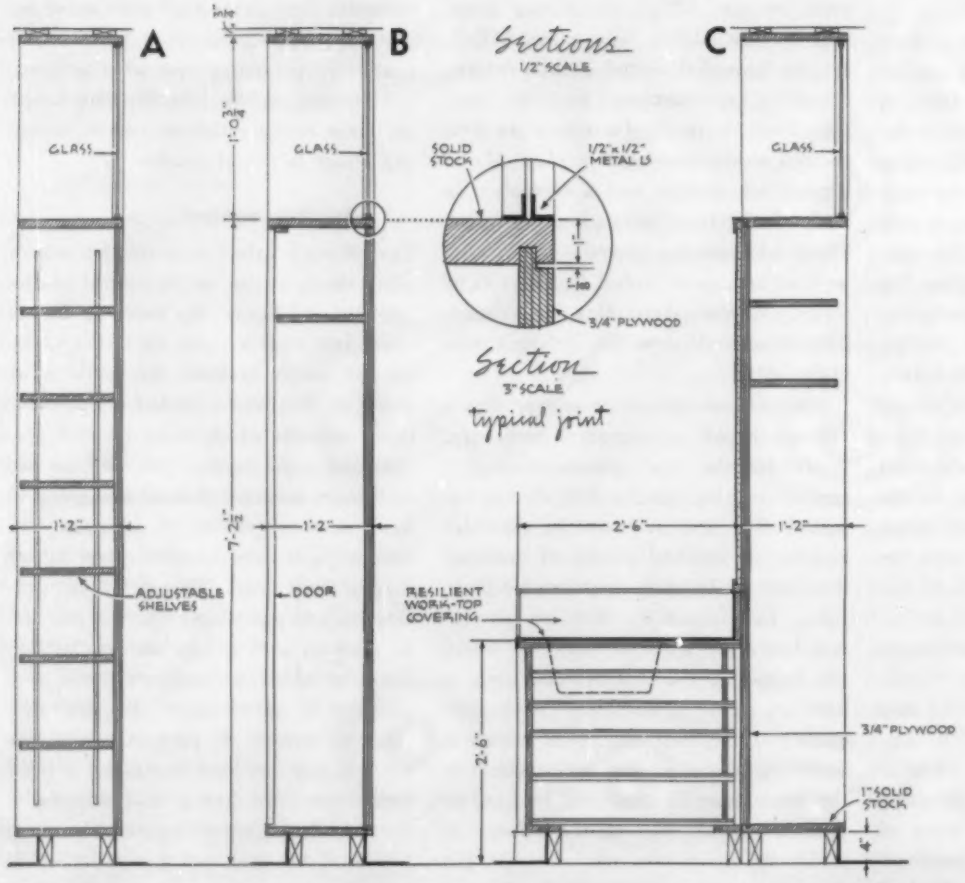
The effective value of production scheduling seems to lie in its control of the production process. By knowing in advance just what it is we are trying to do, we can better evaluate our methods of doing it. We have a chance to eliminate those methods which make no real contribution to the finished job. We can say with some accuracy that we are going to have so many sheets of drawings and that we will need so many men for so long to draw them. We can tell our contractors and our clients that the job will be done on such a date and not have to resort to alibis or overtime whose productivity is questionable. We can allocate the number of persons needed for the job and not have to expand a good production crew hastily and wastefully. Best of all, it gives us a plan to work to, a view of our goal, and a gage by which we can measure our progress to that goal.

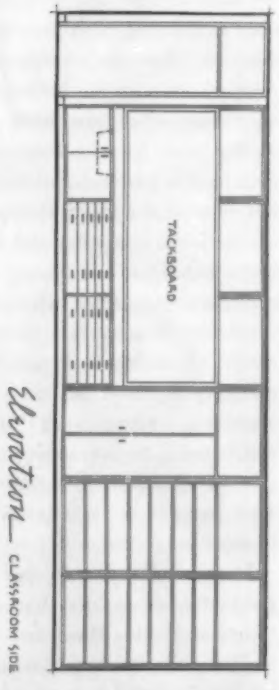
p/a selected detail

corridor storage wall

GOTTSCHO-SCHLEISNER

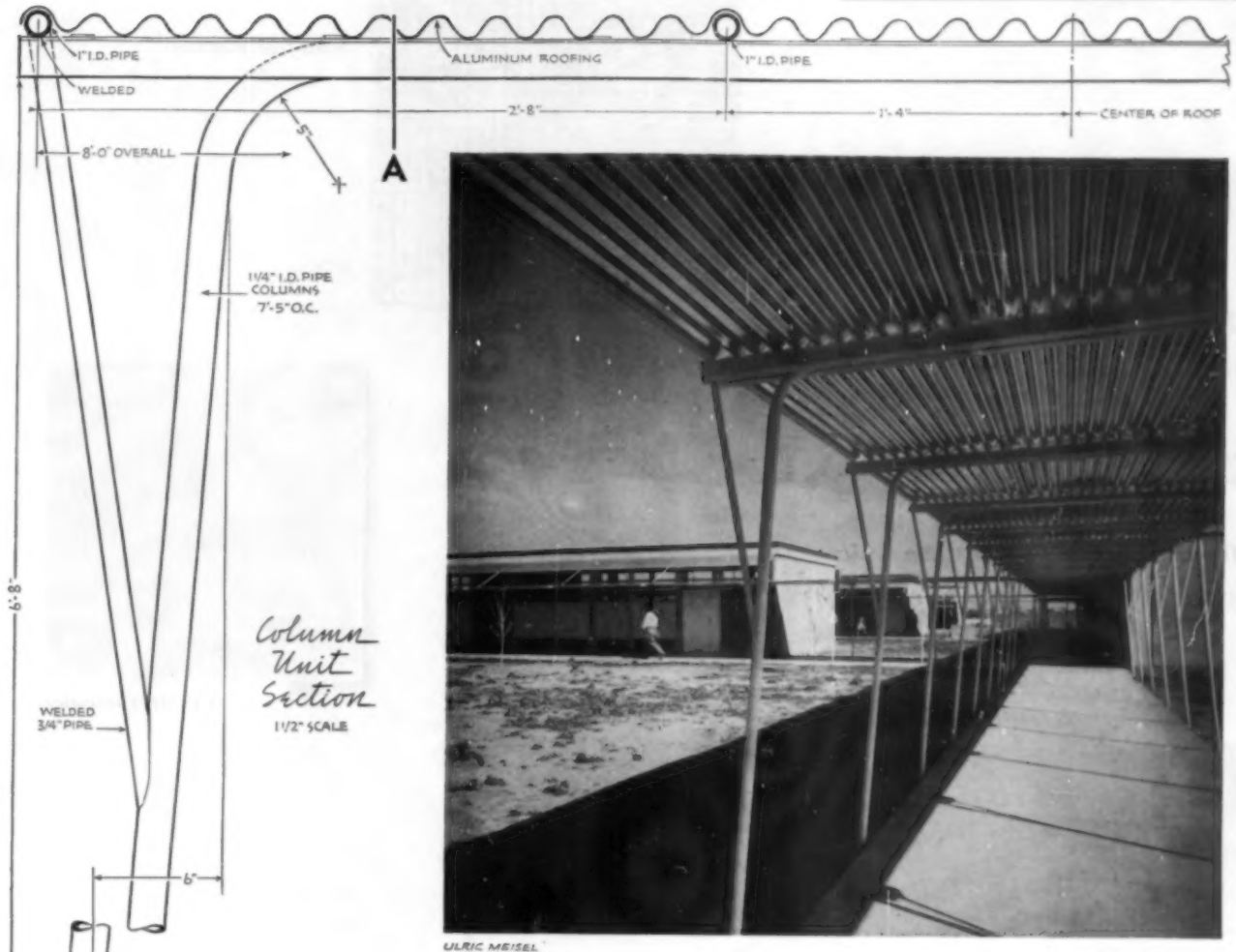






ELEMENTARY SCHOOL, Schenectady, N. Y.
Skidmore, Owings & Merrill, Architects

covered walkways, sun shades



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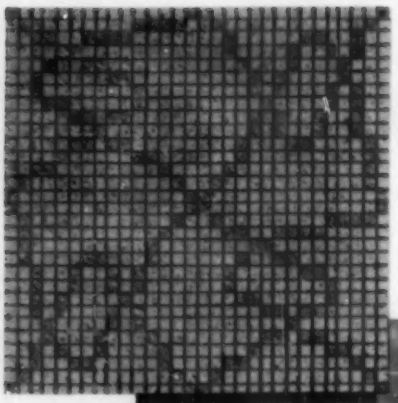
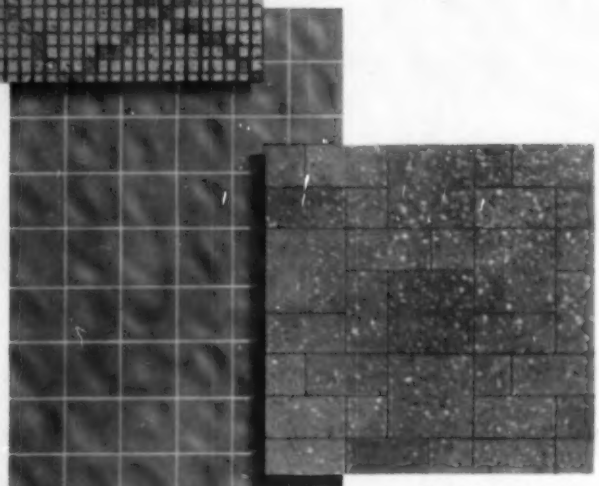
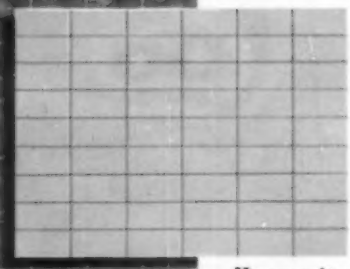


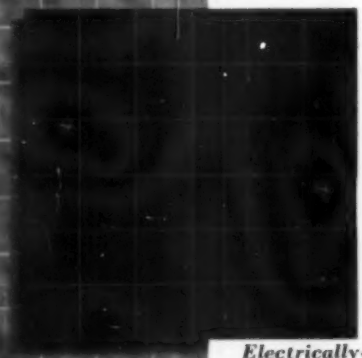
Formfree mosaics



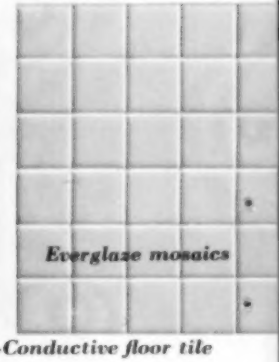
Granitex mosaics



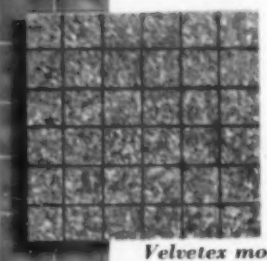
Harmonitone mosaics



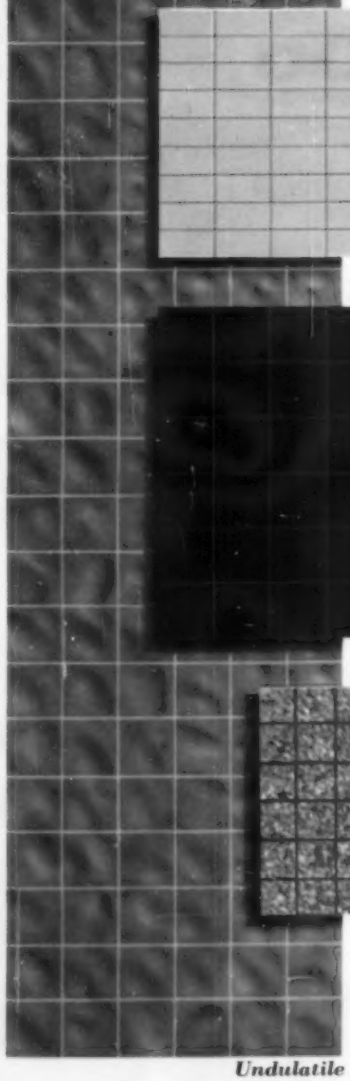
Electrically-Conductive floor tile



Everglaze mosaics



Velvetex mosaics



Undulatile

Conference room, Reinhold Publishing Corporation

Louise Sloane

offices

In the two offices shown in this section—for Reinhold Publishing Corporation, publisher of P/A, and for an investment brokerage firm—it is easy to see at a glance the way the present-day wind blows in office interior design. That direction is obviously toward the "home away from home" atmosphere, with color, texture, furniture, and even accessories handled deliberately to resemble a residential setting. Only in lighting does the purely functional supersede, and even here, the overall lighting scheme is supplemented by decorative fixtures.

Superior appearance of practical materials, sturdy enough to take the everyday usage of office activity, together with notably improved design in office furniture, have made this interior design approach considerably simpler to execute. Client acceptance has fortunately widened for the office that invites instead of over-awes—for the office that relies on taste rather than tradition to impress.

For the attention of those benighted critics of contemporary design who will accuse the modernist of creating home interiors "so functional that they look like offices," we offer these offices so dedicated to comfort, color, and convenience that they look like homes!

offices

client	Reinhold Publishing Corporation
location	New York, New York
architect	Louis Shulman

A reception area that clearly states the contemporary design principles for which the company stands. This room welcomes the visitor with vivid color, is alive with light reflected in polished surfaces. The all-glass door wall invites entry from the elevator hall. A free-standing wall of walnut panels with white-painted uprights displays books and also acts as a divider between reception area and working offices beyond. The conference area is defined by an olive-green rug, repeating the color of one wall. Chairs are natural birch with blue-striped upholstery, sofa is bright orange. The other wall in this area is bright blue, against which hangs a walnut-and-white bookcase. The wall behind the receptionist's desk, carrying the names of all Reinhold publications, is light gray. Ceiling is white, as is the plastic fabric on walls at either side of the glass door wall. Tile floor is black. *Photos: Ben Schnall*

textured plastic

blue wall

offices

gold carpeting

Office of the President of Reinhold Publishing Corporation. Window wall and facing wall are white and end walls are deep blue. Carpeting is gold and sheer draperies are gray. Desk and wall-length storage cabinet are walnut. Chairs and sofa are upholstered in blue-with-black texture.

data

cabinetwork

General: Walter P. Sauer & Sons, 30-28 Star Ave., Long Island City, N.Y.

doors, windows

Glass Doors: Pittsburgh Plate Glass Co., 632 Duquesne Way, Pittsburgh, Pa.

Metalwork Doors & Frames: Superb Bronze & Iron Co., Inc., 3064 Atlantic Ave., Brooklyn, N.Y.

furnishings, fabrics

Furniture: Knoll Associates, Inc., 575 Madison Ave., New York 22 N.Y.; Jens Risom Design, Inc., 49 E. 53 St., New York 22, N.Y.

Upholstery Fabrics: Creative Looms, Inc., 210 E. 51 St., New York, N.Y.

Drapery Fabric: Boris Kroll Fabrics, Inc., 515 Madison Ave., New York, N.Y.

lighting

Over-Desk Fixtures: Finland House, 41 E. 50 St., New York, N.Y.

Ceiling Fixtures: Ruby-Philite Corporation, 32-02 Queens Blvd., Long Island City, N.Y.

Incandescent Fixtures: Century Lighting Inc., 521 W. 43 St., New York, N.Y.

Parallel Wall Units: Kliegl Bros. Universal Electric Stage Lighting Co., Inc., 321 W. 50 St., New York, N.Y.

walls, ceiling, flooring

Marble: Friedman Marble & Slate Works, Inc., 37-21 Vernon Blvd., Long Island City, N.Y.

Panels: U.S. Plywood Corporation, 55 W. 44 St., New York 36, N.Y.

Glass: Libbey-Owens-Ford Glass Co., Nicholas Bldg., Toledo 3, Ohio.

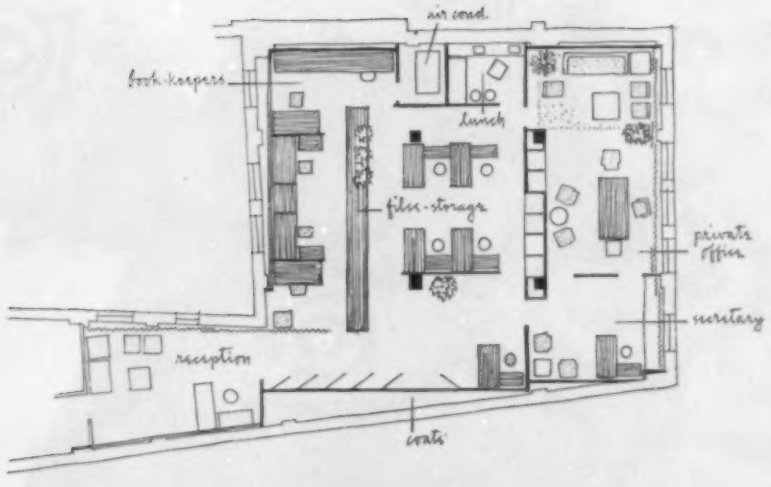
Lobby Wall Covering: "Vicrtex"/ L. E. Carpenter Co., 350 Fifth Ave., New York, N. Y.

Ceiling Tile: "Travacoustic"/ National Gypsum Co., 325 Delaware Ave., Buffalo 2, N.Y.

Flooring: "Matico"/ Mastic Tile Corporation of America, 153 W. 57 St., New York, N.Y.

Carpet: Alexander Smith & Sons Carpet Co., 295 Fifth Ave., New York 16, N.Y.; James Lees & Sons, E. Fourth St., Bridgeport, Pa.

gray nubby sheer



client	Livingstone & Co.
location	Boston, Massachusetts
architect	Isidor Richmond & Carney Goldberg
interiors	Knoll Planning Unit

Executive office in an investment brokerage firm's quarters reflects the "living room look," with all storage concealed, furniture chosen and arranged for a relaxed, unofficial atmosphere. Carpet, drapery, and wall colors are natural and white. The seven-foot desk and small occasional tables are teak, as is the storage wall *(not shown)*. Adjoining office for private secretary completes the executive area, secluded at farthest end of total office plan. Other interiors are shown on the following pages. All furniture and fabrics from Knoll Associates, New York, N.Y.

offices

Requirement was an open plan with work areas defined by suggestion. Diversified area-dividers include: solid partitions of pandanus-covered plywood set in channels of cold-rolled steel; sheer curtain fabric (ceiling-hung); and transparent partitions of stretched split bamboo.

Serving the double-purpose of area-divider and storage enclosure is a white-Formica-topped filing unit, accessible from both sides. As in all of the custom-built storage in this installation, interiors were dimension-designed to accommodate the company's own special printed forms. Colors throughout are gray, natural, and white; with one brilliant color introduced in the vertical-siding storage wall, lacquered clear yellow. Furniture is walnut and black oxidized steel. *Photos: Scott Hyde*

pandanus on plywood

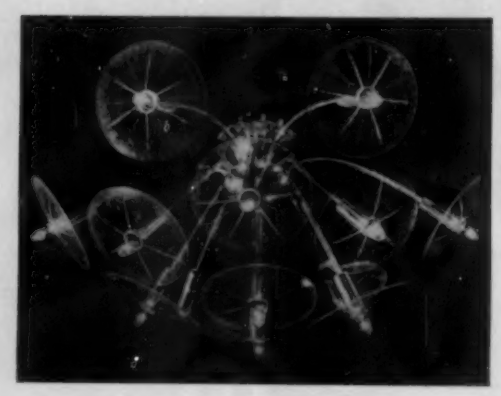
flush air-conditioning strip

textured carpet

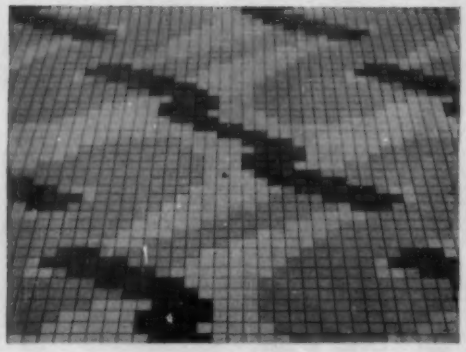
bookkeeping area

p/a interior design products

Ceiling Fixture: "Starfire"/ textured disks, gold, white, and crystal/ ceiling canopy brass/ 13-light design/ 25" wide, 10-3/4" long/ design by Carl Moser/ **retail:** $108/ **Lightolier, Inc., 11 E. 36 St., New York, N. Y.**



Aluminum Draw Drapery: "Flexalum"/ vertical venetian blind/ single-cord operated to close completely or set at angle for light and ventilation control/ in 15 colors, combinations, or printed patterns/ **Hunter Douglas Corporation, 150 Broadway, New York, N. Y.**



Ceramic Tile Patterns: "Pan-O-Ramic"/ factory-assembled designs/ composed of various-size tiles/ available in 31 porcelain-type colors, 14 clay-type colors/ indentation-proof/ illustrated: #3003-11A, three-color, 1-1/16" squares in a straight joint setting/ **American-Olean Tile Co., Lansdale, Pa.**

Fabric-Covered Folding Door: "Fol-Bak"/ steel construction/ vinyl-coated cover in three colors/ complete with cornice, screws, track/ **Foldoor Div., Holcomb & Hoke Mfg. Co., Inc., 1545 Van Buren St., Indianapolis, Ind.**

Wood Folding Door: (left) "Panelfold"/ vertical solid panels of real wood/ connected with color-fast, flame-resistant, noncracking Goodrich vinyl resin/ hinged with pantograph self-aligning aluminum mounting units/ doors supported at top only/ nylon wheels, heavy brass bearings in extruded aluminum overhead track/ available in many woods, finishes, colors/ **Panelfold Doors, Inc., 4951 E. 10 Court, Hialeah, Fla.**

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that is durable, economical and colorful

Wherever indoor highway floor coverings are needed that must give downright durability, use HAKO Asphalt Tile. In institutions and industry that demand economy and long wear, in commercial establishments and homes that want color and design beauty—Standard, New Pastel, or Grease Proof HAKO Asphalt Tile is accepted everywhere. The color will not wear off and the dirt will not wear in. HAKO Tile is reinforced with asbestos fibers and styrene plastic. The smooth sealed surface is permanent for the life of the floor. You can install HAKO Asphalt Tile above, on, or below grade, and over radiant heated floors. Write for suggestions on how HAKO Floor Tiles can help you.

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PITTSBURGH 30, PA.

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This decorative glass partitions space . . . *but not the light!*

The nice thing about patterned glass is the way it solves so many of your design problems—artistically. See how attractive translucent glass makes this reception room. Here is the privacy of a complete partition, yet light flows freely through it to brighten both sides.

The glass panels brighten the area with softly diffused light . . . making this a pleasant business place.

Blue Ridge *Patterned Glass* is as practical as it is beautiful. It never needs painting or refinishing . . . wipes clean and sparkles like new. The glass is simple to install and provides built-in beauty that lasts!

The *Securit** Interior Glass Door complements the wall of translucent glass to complete the picture perfectly.

Let your imagination go! You can choose from linear, checkered or over-all patterns of glass by Blue Ridge. And, you can get still more variations with plain, textured and *Satinol** finishes.

Look up your L·O·F Distributor or Dealer in the yellow pages of the phone book under "Glass". He'll be glad to show you samples. For our booklet of design ideas for interiors, write to Dept. B-965—Libbey·Owens·Ford Glass Co., 608 Madison Avenue, Toledo 3, Ohio. *®

BLUE RIDGE PATTERNED GLASS

Made by BLUE RIDGE GLASS CORP. • Sold by LIBBEY·OWENS·FORD GLASS
Distributors

p/a interior design products

Executive Office: sofa #U-190/ natural-with-white tweed fabric/ **retail:** $470 in muslin; low armchair #U-420/ dark gold textured fabric/ **retail:** $189 in muslin; swivel armchair #U-402/ leather/ **retail:** $168 in muslin; cane-back armchair #C-140/ seat in light gold/ **retail:** $96 in muslin; armless chair #U-450/ light gold fabric/ **retail:** $180 in muslin; desk, "Group 8"/ top #8-4/ **retail:** $220; 3-drawer case #8-22/ **retail:** $150; leg base #8-12/ **retail:** $84/ all wood in walnut, oil finish/ **Jens Risom Design, Inc., 49 E. 53 St., New York 22, N. Y.**

Chairs: armchair #R-24/ 29-1/2" high, 26-1/2" long, 25" deep/ foam rubber over plywood construction/ **retail:** $120 in muslin; side chair #R-24/ 29-1/2" high, 20-1/2" long, 25" deep/ foam rubber over plywood construction/ **retail:** $93 in muslin/ **Edward A. Roffman Associates, 17 E. 48 St., New York 17, N. Y.**

Sculptured Chair: #176-A/ natural walnut finish/ designed by Vladimir Kagan/ **retail:** $120 in muslin/ **Kagan-Dreyfuss, Inc., 123 E. 57 St., New York 22, N. Y.**

Flexible Seating Group: unlimited seating combinations/ basic steel frame/ 13-1/2" high, 24" x 24" per unit/ in black, brass, or chrome finishes/ adjustable leg domes; lounge insert/ 30-1/2" high, 28-1/2" deep, 24" wide/ seat and back fully upholstered over hardwood frame/ foam-rubber filling; cushion insert/ 24" x 24" x 3-1/2" thick/ seat fully upholstered over hardwood frame/ foam-rubber filling; marble table top/ 24" x 24" x 3/4" thick; Formica table top/ 24" x 24" x 1-1/4" thick/ designed by Burton Tysinger/ **Lehigh Furniture Corporation, 16 E. 53 St., New York 22, N. Y.**

Deep Chair: #5680/ birch/ cane-wrapped arms, woven cane back/ foam-rubber cushion/ 25" x 21" x 28"/ designed by William Hinn/ **retail:** $139/ **Urban Furniture Co., 323 E. 44 St., New York, N. Y.**

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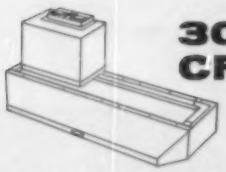
from $71.65 list . . . up

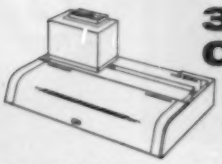


300 CFM

Trade-Wind Model **1501** Ventilator plus 39" or 42" Stationary Stainless Steel Hood —

$71.65 *LIST*

Add $11.00 for Copper

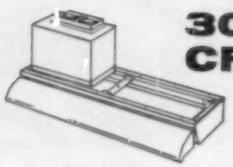


300 CFM

Trade-Wind Model **1501** Ventilator plus 30" to 42" Expansion Hood, Stainless Steel or Copper —

$83.40 *LIST*

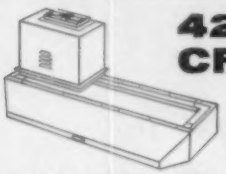
Add $2.95 for 42" to 54" Hood



300 CFM

Trade-Wind Model **1501** Ventilator plus 39" or 42" Fold-Under Hood, Stainless Steel —

$91.65 *LIST*

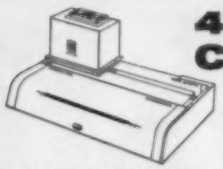


425 CFM

Trade-Wind Model **2501** Ventilator with 4 speeds, plus 39" or 42" Stationary Stainless Steel Hood —

$91.20 *LIST*

Add $11.00 for Copper

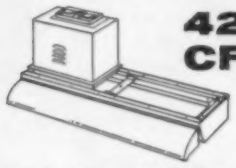


425 CFM

Trade-Wind Model **2501** Ventilator with 4 speeds, plus 30" or 42" Expansion Hood, Stainless Steel or Copper —

$102.95 *LIST*

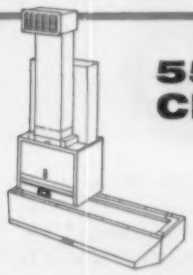
Add $2.95 for 42" to 54" Hood



425 CFM

Trade-Wind Model **2501** Ventilator with 4 speeds, plus 39" or 42" Fold-Under Hood, Stainless Steel —

$111.20 *LIST*

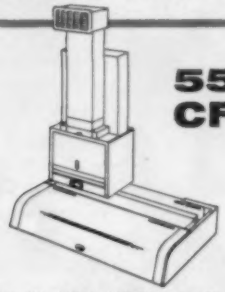


550 CFM

Trade-Wind Model **3501** Super Ventilator with 4 speeds, plus 39" or 42" Stationary Stainless Steel Hood —

$142.25 *LIST*

Add $11.00 for Copper

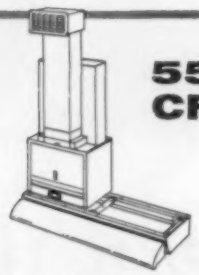


550 CFM

Trade-Wind Model **3501** Super Ventilator with 4 speeds, plus 30" to 42" Expansion Hood, Stainless Steel or Copper —

$154.00 *LIST*

Add $2.95 for 42" to 54" Hood

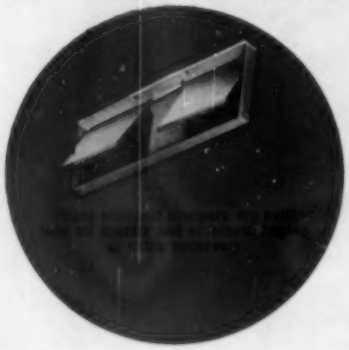


550 CFM

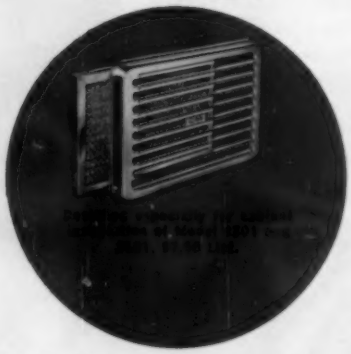
Trade-Wind Model **3501** Super Ventilator with 4 speeds, plus 39" or 42" Fold-Under Hood, Stainless Steel

$162.25 *LIST*

BUILT-IN BACK DRAFT DAMPERS



FILTER GRILLES



HOOD LIGHT

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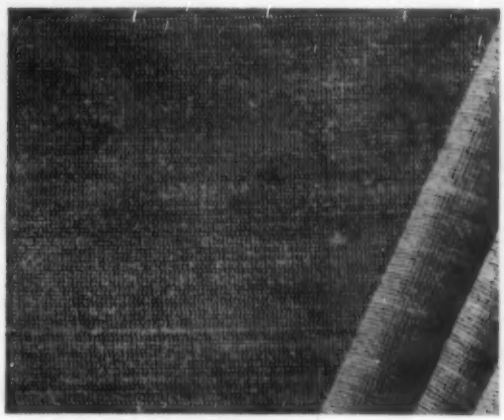
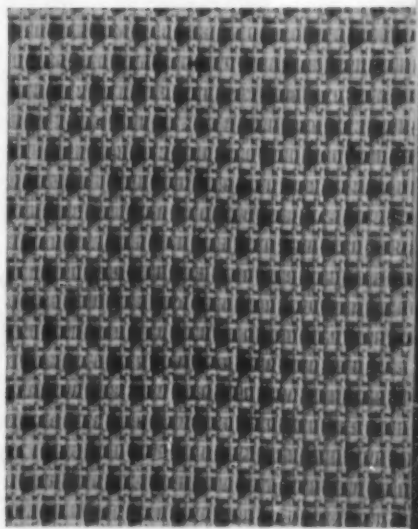
p/a interior design products

Twin-Ground Plate Glass: "Parallel-O-Plate"/ twin-ground polished plate glass reflects without distortion/ near-perfect parallelism creates "double" illusion/ **Libbey-Owens-Ford Glass Co., Toledo, Ohio.**

Fire-Resistant Casement Cloth: "Tussore"/ fiber-balanced sheer combining Dynel, Saran, and Fortisan/ in ten colors, all light-stable/ 50" wide/ high abrasion-resistance/ requires no special flame-proofing/ approved for public places by N. Y. C. Board of Standards and Appeals/ **J. H. Thorp & Co., Inc., 250 Park Ave., New York, N. Y.**

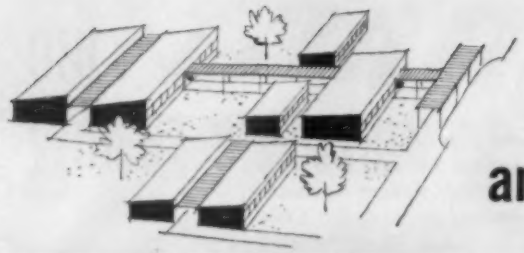


African Fabric: (below) handwoven/ natural wool, natural colors/ from Berber tribes of North Africa/ processed in U. S. for moth-proofing and preshrinking/ #XI-A, 64" wide, black and white/ **retail:** $19.50 per yd./ collection stocked for immediate delivery/ **Mauretania Fabrics, Inc., 838 West End Ave., New York, 25, N. Y.**



Upholstery Texture: "Bahia"/ power-loom duplicate of hand-weave/ 48% wool/ 54" wide/ designed by Lyda Weyl/ **retail:** $10.80 per yd./ **Knowwiser, Inc., 1 E. 53 St., New York 22, N. Y.**

Wallpaper: "Promenade"/ hand-printed/ black on white, copper on charcoal/ **retail:** $6 per single roll/ **Wall Trends, Inc., 509 Madison Ave., New York, N. Y.**



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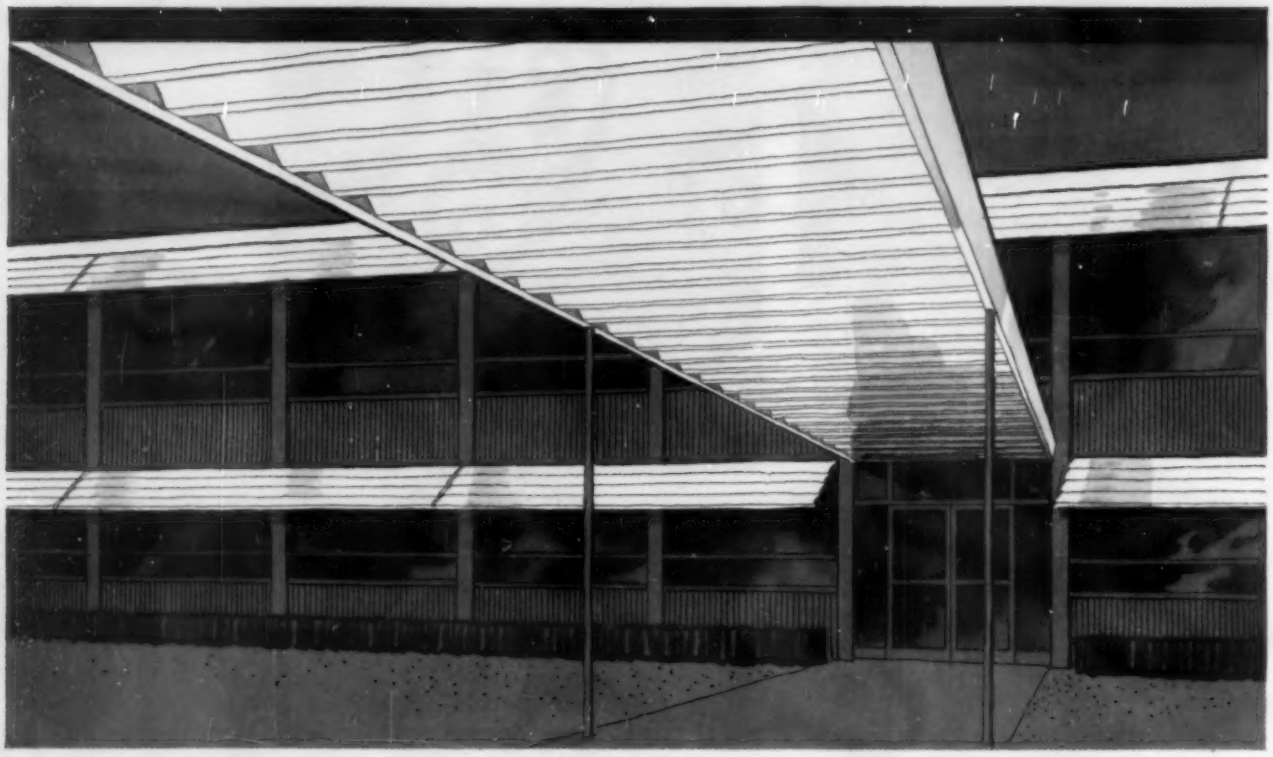


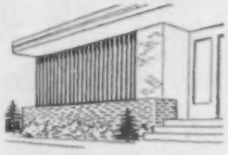
KAWNEER
all-aluminum prefabricated

CANOPY

entrance protection

walk protection

K-LOUVER



window protection

overhang addition

School design can be simplified with Kawneer's Sun-Control and weather protection products. You have great flexibility with the prefabricated sections enabling you to cover almost every glass opening and passageway to design specifications. The advantages far exceed the relatively low cost. Both products are made of heavy-gauge alumilited aluminum which means long, maintenance-free life. The reflective surface assures cool areas. The unique shapes such as the "W" of the canopy sections provide and encourage ventilation, yet protect from rain, and snow. The quick and easy erection means a faster completion date and fewer labor hours. Fill out the coupon below to learn more about Kawneer Sun-Control and Weather Protection products, and how they can be adapted to your school plans.

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Flexible Plastic Fabric: "Nygen Tolex"/ new leather-like material for upholstery or automotive application/ nonwoven base gives balanced stretch in all directions, excellent recovery/ desirable hand/ exceptional tensile strength, resistance to flex and fold, edge-tear, stitch-tear/ available in three standard qualities/ new pattern, "Pampas," in simulated leather effect, 21 colors/ **Textileather Division, The General Tire & Rubber Co., Toledo 3, Ohio.**

Random Plank Asphalt Tile: tile plan:s 4" wide, 24" long, 1/8" and 3/16" thick/ woodtone colors in Driftwood, Oak, Maple, Walnut/ fast-laying, waste-eliminating/ **The Tile-Tex Division, The Flintkote Co., 1232 McKinley Ave., Chicago Heights, Ill.**

Brass Flooring Inserts: of 1/8" solid brass/ one side highly polished, underside taped for protection/ designs: "Star," 2¾"; "Diamond," 1¾" x 3½"; "Fleur de Lis," 2¾", 4"; "Solid Octagon," 2"; "Octagon Frame," 3", 4"; "Square," 2", 3", 4"; "Stripping," ¼", ½"/ **price:** $13.70 for complete sample set/ **Simon Manges & Son, Inc., 575 Madison Ave., New York, N. Y.**

Marble Tile: "Markwa"/ wall and floor tile of quarried marble, ½" thick/ available in 18 selected marbles/ sizes: 8" x 8", 8" x 12", 12" x 12"/ wall tile has polished finish, cushion edges/ floor tile has mat finish, square edges/ may be applied over painted plaster, plywood, cement, concrete wtih adhesive, or over masonry, cinder block, with mortar/ **Vermont Marble Co., 61 Main St., Proctor, Vt.**

"Basket-Weave" Sliding Doors: of Canadian Basswood or Philippine Mahogany/ factory-finished in clear lacquer/ decorative wood-slat weave permits air circulation/ top track and bottom threshold screw-installed/ nylon-wheeled roller hardware/ stock sizes: 6' 8", 8'0"/ units: 2-panel, 3-panel, 4-panel wardrobes/ **Robin Wood Products Co., Pomona, Calif.**

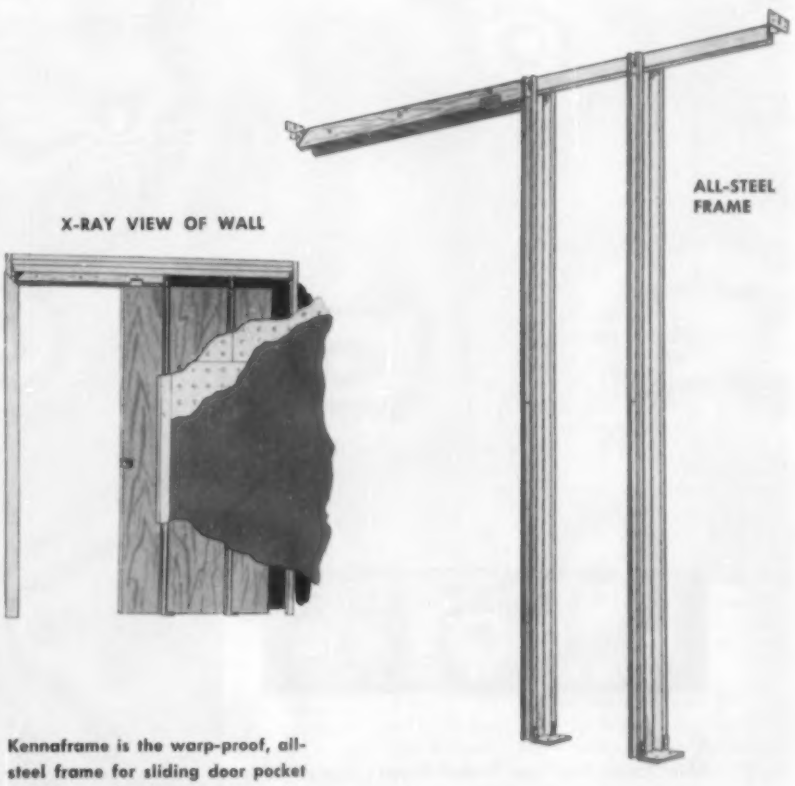
Appliance Paint: "Colorage"/ high-gloss porcelain finish paint may be used to refinish air conditioners, refrigerators, washers, dryers, freezers/ also semi-gloss for woodwork/ five colors, matched to General Electric appliances: pink, brown, green, yellow, blue/ **A. C. Horn Division, Sun Chemical Corporation, 10 St. and 44 Ave., Long Island City 1, N. Y.**

Knobless Door Latch: "Lev-R-Latch"/ 3-1/3" high, 4" long, face extension ½" outward from door/ beveled edges, flush surface/ faceplates of heavy gage, rust-proof zinc alloy, plated in various finishes/ three-step installation simplified for labor cost reduction/ new operating mechanism of heavy-duty material/ available with or without locking mechanism/ **Soss Manufacturing Co., 21777 Hoover Rd., Detroit 13, Mich.**

Textured Venetian Blind Slat: "Daycor"/ weave-like finish, textured surface/ irregular design in accent color on mat background/ in such color combinations as driftwood gray with white, yellow-green with gray and white, blue-green with white/ **Plastic Lume, Inc., Sausalito, Calif.**

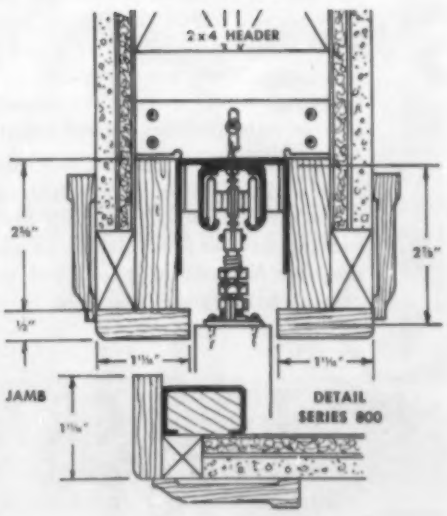
Architects' Planning and Purchasing Service: to aid in selection and purchase of furniture, lighting, fabrics, floor coverings/ showroom available to clients/ catalog system/ follow-through to final installation/ **Euster Associates, 248 E. 49 St., New York, N. Y.**

Hospital Bed Light: full light diffusion up or down/ trigger start ballasts/ ribbed Plexiglas diffusers/ fully enclosed fixture, die-formed and welded of 20-gage steel/ finish: white, aluminum, or special/ 25⅛" long, 5⅞" wide, extension: 10¾"/ **Lightolier, Inc., 346 Claremont St., Jersey City 5, N. J.**



Kennaframe is the warp-proof, all-steel frame for sliding door pocket installations/ now you can specify with confidence a frame that will hold up under continuous use/ adjustable three ways, fits all 2 x 4 walls, wet or dry finish/ it takes any type of trim/ accommodates any standard 1⅜—1¾ in. door/ each prefabricated Kennaframe comes with track and adjustable hangers installed/ all the required nuts, bolts and installation details are included.

The Kennatrack "Architectural Portfolio" gives you full information for detailing this complete line of sliding door hardware/ its scaled detail drawings save you valuable time/ send today for your free "Portfolio"/ Kennatrack Corporation, Elkhart, Ind.

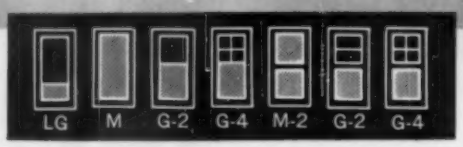


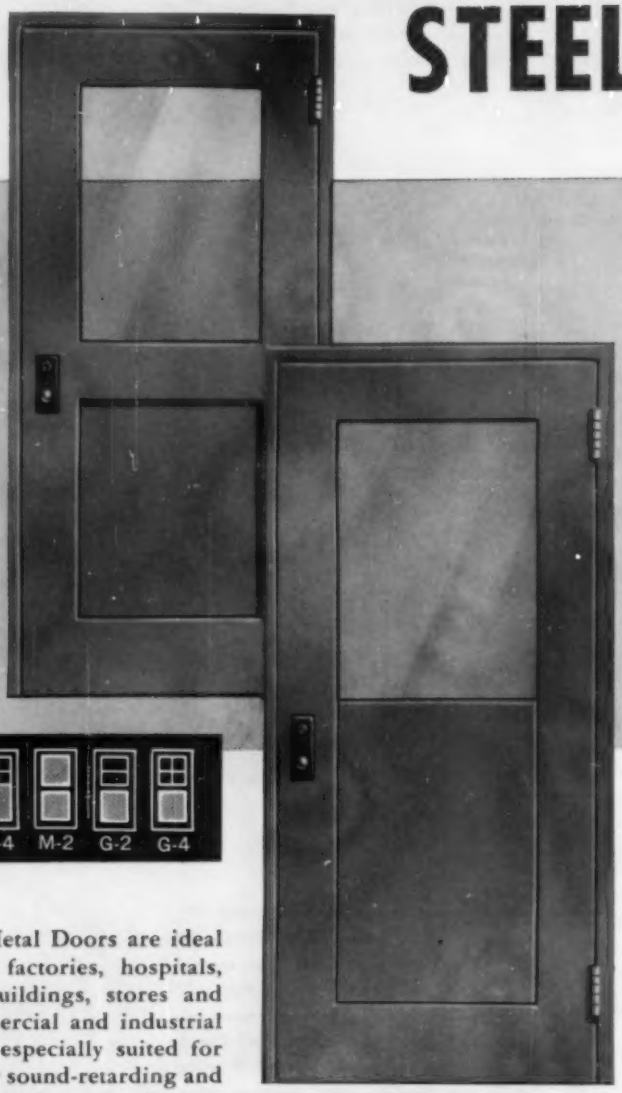
STEELCRAFT • STEELCRAFT • STEELCRAFT • STEELCRAFT • STEELCRAFT • STEELCRAFT

STEEL Craft

Specify HOLLOW METAL DOORS BY STEELCRAFT

PANEL TYPE





FLUSH TYPE

Steelcraft Hollow Metal Doors are ideal for use in schools, factories, hospitals, warehouses, office buildings, stores and other types of commercial and industrial buildings. They are especially suited for buildings where their sound-retarding and fire-resistant qualities are important factors.

Steelcraft Hollow Metal Doors are available in a *complete line of both* flush and panel types. All hardware including hinges and locking devices is furnished. In addition a *complete line* of anti-panic and other accessory hardware is available.

You Save 3 Ways!

COST LESS TO BUY

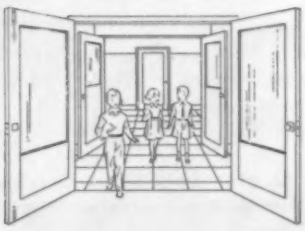
Modern assembly line methods effect big savings in fabrication of Steelcraft Hollow Metal Doors. Mass production enables us to build top quality doors and pass these savings on to you.

COST LESS TO INSTALL

Steelcraft Hollow Metal Doors are precision-built to insure fast, easy installation in frames furnished by Steelcraft, eliminating field work and fitting—a big saving in time and labor.

COST LESS TO MAINTAIN

Steelcraft Hollow Metal Doors cannot stick, swell, splinter or warp. They are precision-engineered and built to provide years of smooth, quiet, trouble-free service with virtually no upkeep.



THE STEELCRAFT MANUFACTURING COMPANY
Rossmoyne, Ohio (In Greater Cincinnati)

THE STEELCRAFT MFG. CO., DEPT. PA-655
9017 Blue Ash Rd., Rossmoyne, Ohio

Please send me complete information on Steelcraft Hollow Metal Doors.

Name _____ Title _____

Company _____

Address _____

City _____ Zone ____ State _____

Editors' Note: Items starred are particularly ★ *noteworthy, due to immediate and widespread interest in their contents, to the conciseness and clarity with which information is presented, to announcement of a new, important product, or to some other factor which makes them especially valuable.*

air and temperature control

1-29. Venturafin Unit Heaters (7517), 48-p. booklet on unit heaters designed for use with steam or hot-water heating systems. Outlines advantages of unit heaters in commercial or industrial buildings; gives step-by-step procedure for estimating number and location of heaters. Also provides data and specifications on all component parts. Tables of heat-loss coefficients and capacities of different types of heaters; wiring and plumbing diagrams. American Blower Corp., Detroit 32, Mich.

1-30. Armstrong Heating and Air-Conditioning Equipment (114), 48-p. catalog covering both winter and summer temperature-control equipment. Describes winter air-conditioning furnaces fired by oil, gas, or coal; shows companion summer cooling units and, also, packaged conditioners. Drawings, dimensions, and specifications accompany description of each model. Armstrong Furnace Co., Columbus, Ohio.

1-31. Series 3-B Cooling Towers (477), 12-p. pamphlet on cooling towers for residential, commercial, or industrial installations. Explains design features which insure quiet performance and give low silhouette on roof. Rating tables supplied for towers ranging in output from 2 to 360 tons. Drawings, dimensions, and specifications. Binks Mfg. Co., 3114-44 Carroll Ave., Chicago 12, Ill.

1-32. Airtemp Air Conditioners, 20-p. bulletin containing information on line of summer and winter air-conditioning equipment. Describes air- or water-cooled units to be used in conjunction with winter-heating system for year-round temperature control; gives data on packaged units and window models. Drawings, dimensions, and specifications for each type. Airtemp Div., Chrysler Corp., Dayton 1, Ohio.

1-33. Delta Unit Heaters, AIA C-43, 12-p. brochure discussing advantages of direct-fired, oil-burning unit heaters. Explains operation of self-contained units; gives recommendations for installation. Also provides data on comparative costs of several fuels and suggests short-cut method for estimating heat losses. Drawings, diagrams, specifications. Delta Heating Corp., Trenton 8, N. J.

1-34. "LoLine" Cooling Towers (5.1.902), 4-p. circular illustrating mechanical-draft cooling towers. Describes interior construction of redwood and exterior of corrugated cement-asbestos board. Shows low silhouette of towers designed for capacities of more than 75 tons. Cross-section diagram, capacity tables. J. F. Pritchard & Co. of Calif., 4625 Roanoke Pky., Kansas City 12, Mo.

construction

2-39. Aluminum Curtain Walls, AIA 17-A, file folder containing five detail sheets on curtain-wall construction. Drawings illustrate design possibilities of insulated-panel walls finished in aluminum, colored alumilite, or porcelain-enameled steel; details show installation of monumental- or commercial-projected windows of extruded aluminum. Also gives information on methods of erecting curtain walls. Architectural Div., Benson Mfg. Co., 18th and Agnes, Kansas City, Mo.

2-40. Davidson Architectural Porcelain, AIA 15-H-2, 12-p. bulletin describing porcelain-finished steel panels for exterior or interior applications. Features curtain wall fabricated of porcelain-enameled exterior and baked-enamel interior sheets, separated by glass-fiber insulation and air space for condensation control. Provides information on fascia panel designed for use as façade covering. Photos of actual installations; drawings, details, and specifications. Davidson Enamel Products, Inc., 1100 E. Kibby St., Lima, Ohio.

2-41. Grating and Stair Treads, AIA 14-P-21 (1105), 16-p. pamphlet illustrating gratings made in steel, bronze, aluminum, and many alloys. Photos show patterns available in gratings fabricated of interlocking pieces or welded members; includes data on stair treads, armoring, and flooring. Design tables list recommended sizes of bearing bars. Machinery Div., Dravo Corp., Pittsburgh 22, Pa.

2-42. Ing-Rich Porcelpanels, AIA 15 H-2, 12-p. booklet giving information on curtain-wall panels finished in porcelain enamel on steel or aluminum. Outlines properties and advantages of porcelain enamel; provides specifications and details for curtain-wall panels. Drawings show use of porcelain enamel in several new projects. Ingram-Richardson Mfg. Co., Beaver Falls, Pa.

★ **2-43. Mills Movable Metal Walls,** AIA 35-H-6 (55), 68-p. catalog on steel partition walls. Lists features of wall system designed for flexibility; gives data on fire resistance and sound transmission. Describes two types of office walls and, also, industrial partitions. Includes section on accessories, hardware, and wiring facilities; photos, details, and specifications. The Mills Co., 965 Wayside Rd., Cleveland 10, Ohio.

2-44. Aluminum Mill Products (1955), 16-p. brochure giving condensed description of aluminum sheet, tubing, extruded shapes, and structural sections. Explains methods of finishing aluminum; provides guide for selection of alloys. Photos and dimensions of mill products; bibliography of literature on specific subjects. Reynolds Metals Co., 2500 S. Third St., Louisville 1, Ky.

2-45. Rilco Arches, Beams, and Trusses, AIA 19-B-3, 20-p. bulletin covering laminated-wood and solid-timber structural members. Contains spacing tables to aid in design of glue-laminated arches, purlins, and beams; includes information on bowstring trusses, tied arches, and solid-timber assemblies. Photos, construction

(Continued on page 167)

PROGRESSIVE ARCHITECTURE, 430 Park Avenue, New York 22, N. Y.

I should like a copy of each piece of Manufacturers' Literature circled. We request students to send their inquiries directly to the manufacturers.

1-29	2-41	3-34	7-9
1-30	2-42	4-22	7-10
1-31	2-43	4-23	8-9
1-32	2-44	4-24	8-10
1-33	2-45	6-8	10-5
1-34	3-31	6-9	11-4
2-39	3-32	6-10	
2-40	3-33	6-11	

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Do glass blocks make a building look CHEAP?

When the all-glass block was first introduced by Pittsburgh Corning back in 1938, it was frequently misused. Tavern keepers bought them, and put red and blue lights behind them. Thanks to the almost indestructible quality of PC Glass Blocks, many of these installations are still in existence to plague us.

Today, as you know, PC Glass Blocks are radically different from the early blocks. PC Functional Glass Blocks are engineered *optical units* that give the architect a wonderful new light-controlling tool. And when sound design principles are followed, a panel of glass blocks has a delightful, pleasing texture.

The whole technology of glass-making has been up-graded. An increasing variety of patterns and sizes is being made available, until today many architects consider the glass block panels to be an important part of the *aesthetic* effect of the building. Imaginative design, daringly applied, has resulted in glass block panels that literally seem to float in air.

In matters of design, no two architects think alike (thank heaven!). But we think that the photograph on this page proves that glass blocks can look mighty attractive when properly used.

Only glass blocks can give this striking combination of modern good looks, superb daylighting, and low cost maintenance. The building is owned by Art Metal Construction Company, Jamestown, N. Y. Architects: Freeburg & Lindquist, A.I.A., Jamestown.

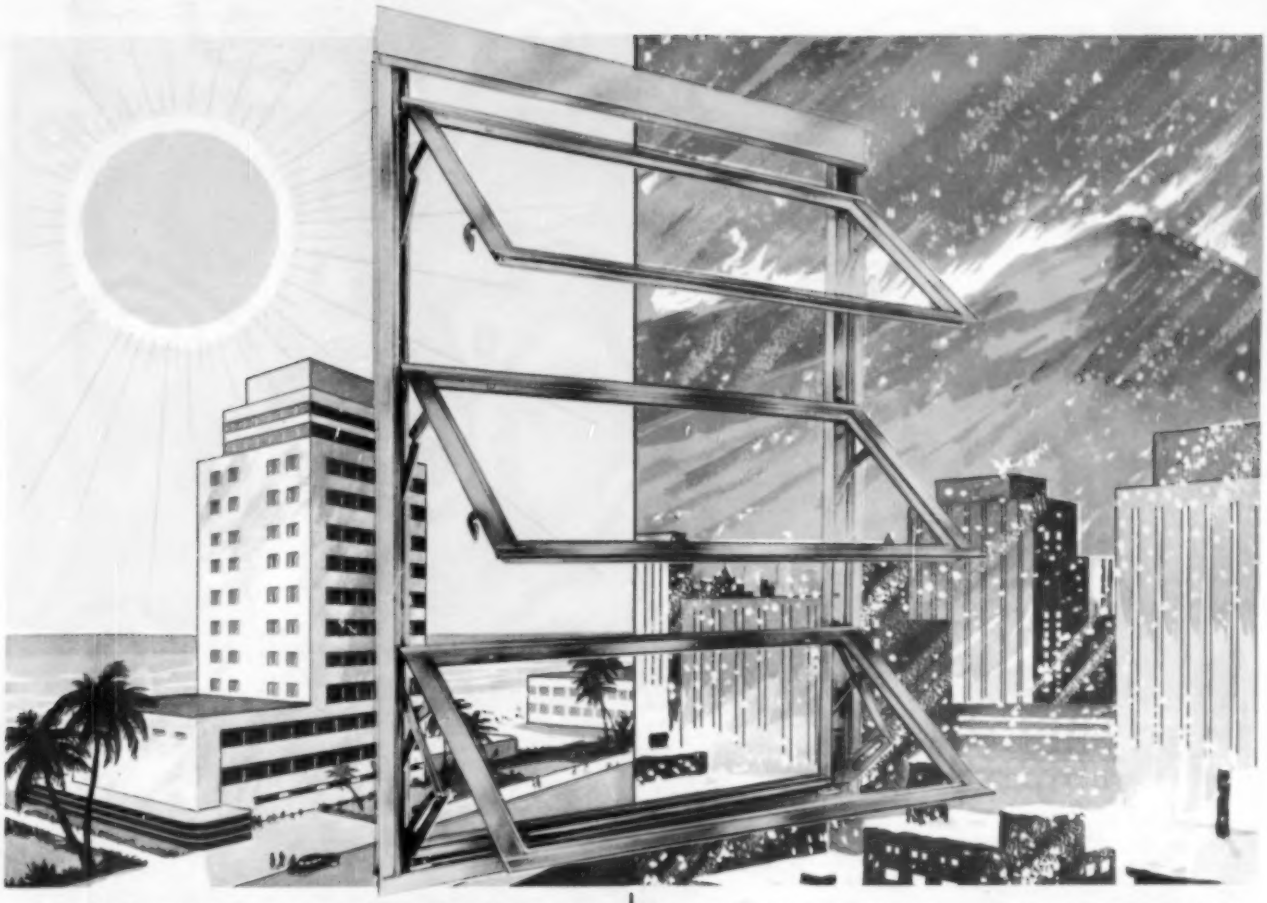
PC Glass Blocks

PITTSBURGH PC CORNING®

Pittsburgh Corning Corporation, Pittsburgh 22, Pa.

ALSO SKYTROL® AND FOAMGLAS®

In Canada: 57 Bloor St. W., Toronto, Ontario



BECAUSE LUDMAN LEADS IN WINDOW ENGINEERING

LUDMAN Auto-lok AUTOMATIC LOCKING WINDOWS

ASSURE TRUE CLIMATE-CONTROL

AS NO OTHER WINDOWS CAN!

SEALS TIGHTER THAN A REFRIGERATOR

TRUE CLIMATE-CONTROL takes full advantage of Nature's milder moods, yet protects against extremes of temperature. Because Auto-Lok Windows are engineered by Ludman to be the tightest-closing windows ever made .... because Auto-Lok Windows open wide to the breeze .... completely control ventilation .... **TRUE CLIMATE-CONTROL starts with Auto-Lok Windows!**

When Air-Conditioning or Heating units are operating, Auto-Lok Windows seal the heat or cold out .... seal the man-made weather in. A simple flip of a clip allows installation of storm windows (or screens), in an instant.

In mild weather, when windows are open, there is no equal to Auto-Lok. These famous windows provide complete control of ventilation. Both the quantity, and quality, of ventilation is controlled by Auto-Lok Windows, which open from the slightest crack of the exclusive Night Vent, to a full opening of all vents. Auto-Lok Windows can direct entering air .... provide fresh air, even when it's raining.

Because Ludman leads in Window Engineering, Auto-Lok Windows stand alone in performance, appearance, and endurance. Because only Auto-Lok Windows provide full control of ventilation .... because Auto-Lok Windows are the tightest-closing windows ever made .... they do both jobs required of a window for TRUE CLIMATE-CONTROL. Their many operating advantages, their long life, their rugged construction are still more reasons why so many leading architects specify Auto-Lok. **Ludman Engineering Research assistance is available to architects on request.**

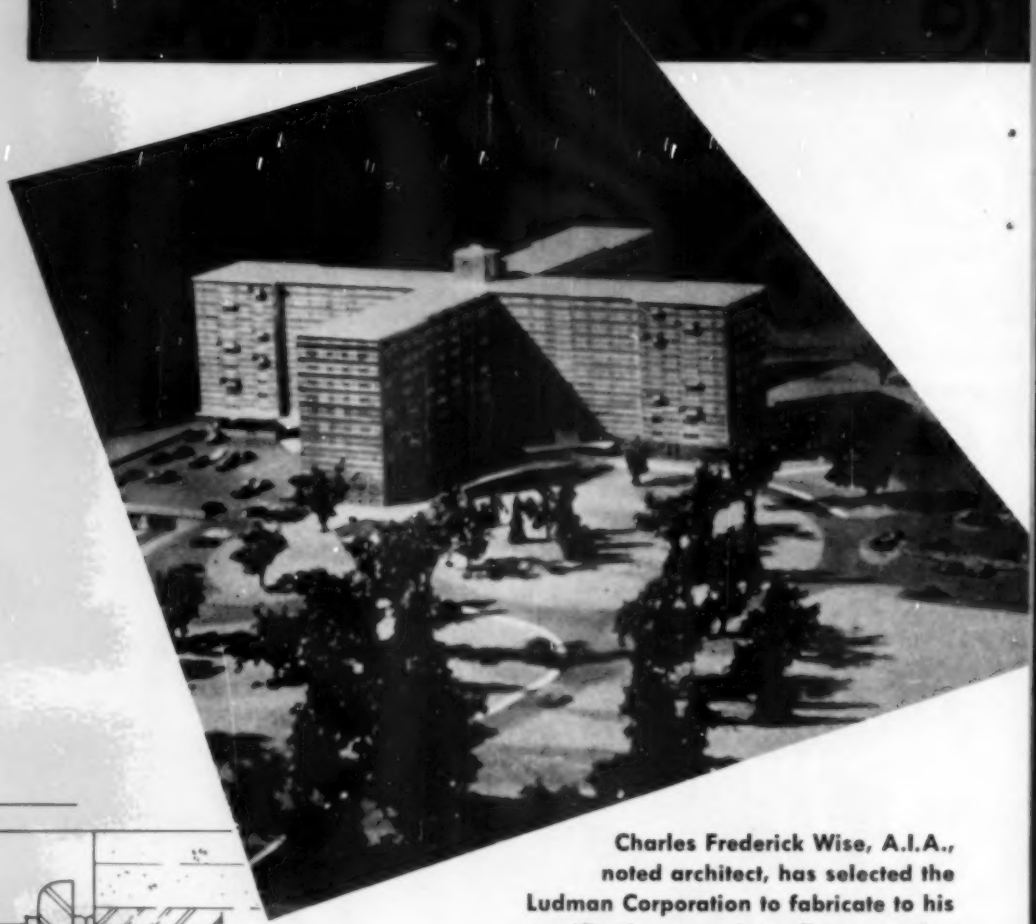
ONLY AUTO-LOK MEETS WHAT EXPERTS* AGREE ARE THE 10 MOST IMPORTANT REQUIREMENTS IN A WINDOW

*Geoffrey Baker and Bruno Funaro in "Windows in Modern Architecture"

LUDMAN Auto-lok

LUDMAN LEADERSHIP

IS HELPING ARCHITECTS

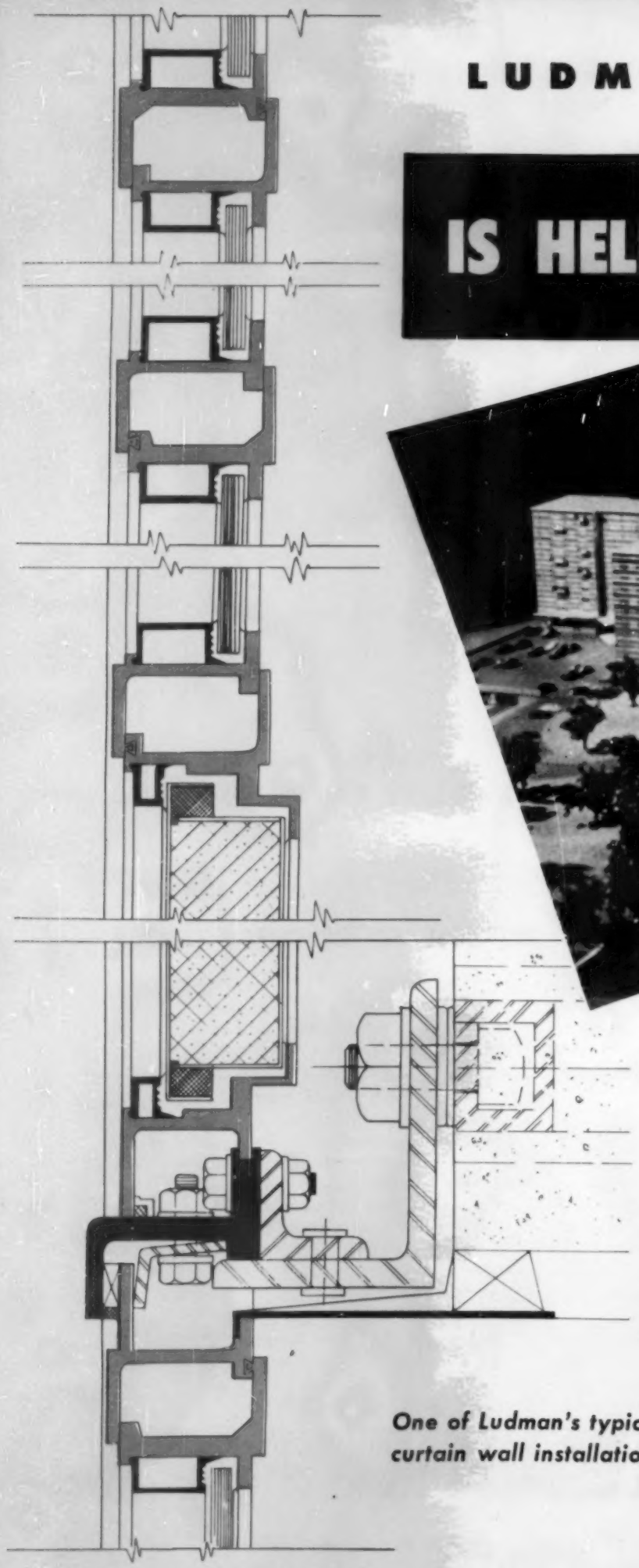


Charles Frederick Wise, A.I.A., noted architect, has selected the Ludman Corporation to fabricate to his specifications curtain wall construction for the new Chetwynd Apartments in Bryn Mawr, Pennsylvania.

Architect: Charles Frederick Wise, A.I.A., Bryn Mawr, Pa.

Structural Engineer: Severud-Elstad-Krueger, New York, N.Y.

Mechanical Engineers: Ginzburg and Smith, Philadelphia, Pa.



One of Ludman's typical curtain wall installation details.

Refer to SWEET'S FILE 16

Member of The Producers' Council, Inc.

IN WINDOW ENGINEERING

change the face of America

Skin-Wall . . . . Curtain Wall . . . . Panel-Wall . . . . these are tools that progressive architects are using to change the face of America. These are the newest methods of the 20th Century—**The Century of Construction.** They are the highly effective means by which architects are speeding up construction . . . . reducing costs . . . . increasing efficiency . . . . creating dynamic new beauty . . . . satisfying clients.

To assist the architect in benefiting from these new building techniques, LUDMAN Corporation is proud to present LUDMAN WINDOW PANELS . . . . ***Another Development of Ludman Engineering.*** Many architects, though tremendously interested in these newest building techniques, have had very little opportunity to become thoroughly acquainted with them. And because every architect either is, or will be, faced with the use of these new building methods, LUDMAN is making an Engineering Service available for consultation from the moment the first rough sketches come off the board. This service is available without cost to the architect.

Now, through the great versatility of LUDMAN WINDOW PANELS, an architect may be confident that he can realize any design he may create. For, on the basic principle of integral wall units that combine window and wall in one easily-handled, quickly-fastened (***see illustration***), labor-saving unit, LUDMAN Engineering Service can capture any wall treatment the architect may wish to execute.

Here are standard production components that are adaptable to any design the architect may create to solve his particular problem. This gives the architect complete freedom of design, while assuring construction at reasonable costs.

LUDMAN Window Panels are built to Ludman's usual high quality standards. Insulated panels, plus Ludman's tight-closing windows (the tightest closing windows ever made), produce a wall with an unusually low Thermal-Conductivity rating.

Let LUDMAN Engineers assist you in your work with this type of construction, or any fenestration problem. Utilize Ludman's knowledge . . . . gained through development and research . . . . in planning your next construction.

LUDMAN *Weatherstripped*

INTERMEDIATE ALUMINUM Projected Window

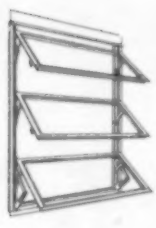
TESTED

10 TIMES TIGHTER
(AIR FILTRATION)
4 TIMES STRONGER
(UNIFORM LOAD)
4½ TIMES STRONGER
(HARDWARE LOAD)

Report on tests conducted by PITTSBURGH TESTING LABORATORY, Pittsburgh, Pa.

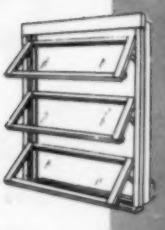
Ludman is proud to report that the results of the test by this highly respected testing organization prove again that Ludman has engineered a superior window product that will stand up under all conditions. This reflects Ludman's basic policy of thorough researching for each new product so that you can stake your reputation without hesitation on Ludman products.

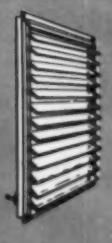
LUDMAN LEADS IN WINDOW ENGINEERING



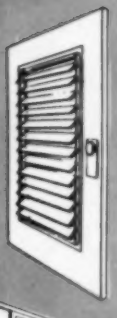
LUDMAN AUTO-LOK ALUMINUM AWNING WINDOWS
The window industry's most outstanding development . . . . the window that has solved so many of the architect's problems.

LUDMAN AUTO-LOK WOOD AWNING WINDOWS
The same Ludman quality . . . . the same tight closure . . . . available in wood windows through jobbers everywhere.

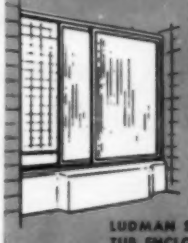




LUDMAN JALOUSIES
Ludman engineering has added more technical improvements to jalousie windows than any other company . . . . produced a jalousie you can specify with confidence.

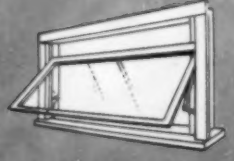


LUDMAN JALOUSIES IN DOORS
Ludman engineered jalousies available also in doors.



LUDMAN ALL-WEATHER ALUMINUM SLIDING GLASS DOORS
Built to high Ludman standards . . . the only door so completely weather-tight as to be suitable for all climate use.

LUDMAN SHOWER DOOR TUB ENCLOSURE
Top quality fibreglass panels set in beautiful Anodized Aluminum Frames. LUDMAN QUALITY CONTROLLED.



LUDMAN SINGLE SASH WOOD AWNING WINDOWS
A Single Sash Wood Unit with extraordinary design flexibility. Handled by wood jobbers everywhere.

YOUR PRESTIGE IS REFLECTED IN THE PRODUCTS YOU SPECIFY

The architect, as do other professional men, cherishes his prestige . . . knows it as his most valuable asset. Fine products . . . products that look better . . . perform better . . . perform well and economically for the life of the building — these are major factors in supporting the reputation of the architect. And the best products cost so little more to install . . . cost so much less across the years. Protect *your* prestige when you specify!

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Please send me full information on the following Ludman Products:

Auto-Lok Aluminum Awning Windows ☐ Wood Auto-Lok Awning Windows ☐
Jalousies ☐ Jalousie Doors ☐ Aluminum Framed Sliding Glass Doors ☐
Shower Door Tub Enclosures ☐ Intermediate Aluminum Projected Windows ☐
Single Sash Wood Awning Windows ☐

Name.....Firm.....

Street.....City.....Zone.....State .....

details, and specifications. Rilco Laminated Products, Inc., First National Bank Bldg., St. Paul, Minn.

doors and windows

3-31. Barcol Overdoors, AIA 16-D (F4644-5), 16-p. catalog on residential and commercial overhead doors. Outlines construction and operation of doors; gives details and recommendations for installation. Also includes data on special accessories such as electric operators and radio controls. Photos, dimensions, specifications. Barber-Colman Co., Rockford, Ill.

3-32. Tru-Seal Aluminum Awning Windows, 16-p. brochure illustrating awning windows for commercial and residential installations. Outlines construction features—concealed weatherstripping, welded corners, heavy-duty operator. Gives details and dimensions of stock-size windows; includes drawings of special accessories. Photos of actual installations, specifications. Tru-Seal Window Div., Industrial Machine Tool Co., Inc., Fenton, Mich.

3-33. Revolving and Swinging Doors, AIA 16-G (1955), 28-p. catalog showing new developments in commercial entrances. Explains advantages of revolving doors in controlling traffic and minimizing air infiltration; describes speed-control device, motor-drive unit, and doors which fold outward in case of panic. Provides detailed information on swinging-door entrances. Photos, drawings, and master specifications. International Steel Co., Evansville, Ind.

3-34. Solar-Selecting Glass Block No. 80-F, 4-p. folder featuring special-purpose glass block for use in areas with severe sun conditions. Charts indicate amount of brightness control, light transmission, and solar-heat transmission; table predicts quantity of illumination for various locations in U. S. Owens-Illinois, Toledo 1, Ohio.

electrical equipment, lighting

4-22. Kaiser Aluminum Bus Conductors. 12-p. bulletin outlining properties of electrical bus conductors made of alumnium. Gives physical as well as electrical data on rectangular, tubular, and solid-round bars; contains tabulated information on joining and bending of bars. Dimensions, weights, and tolerances listed for each shape. Kaiser Aluminum & Chemical Sales, Inc., Palmolive Bldg., Chicago 11, Ill.

4-23. Hospital Lighting (16), 12-p. brochure illustrating lighting fixtures for hospital rooms. Shows several different types of wall and floor lamps; pictures recessed night lights. Contains photos, description, and mounting diagrams for each lamp. Luminous Equipment Co., 1325 W. Webster Ave., Chicago 14, Ill.

4-24. Packaged Luxtrol, AIA 31-F-25 (L-155P), 12-p. booklet containing information on light-control equipment for commercial installations. Provides technical data, drawings, and layout diagrams for packaged units ranging in capacities from 6,000 to 30,000 watts. Includes description of interlocking and noninterlocking light controls. Photos, dimensions, rating table. The Superior Electric Co., Bristol, Conn.

insulation

6-8. Aircoustat, 20-p. bulletin describing method of reducing noise in air-conditioning ducts caused by fans. Explains baffle-type system—used in combination with insulating material—for dispersing noise. Gives recommendations for design of system, with guide for selection of proper model. Drawings; dimensions; performance charts. Industrial Sound Control, Inc., 45 Granby St., Hartford, Conn.

6-9. Mineral-Wool Spun Blanket, AIA 37-C-1, 4-p. circular describing mineral-wool insulating blanket for application on sidewalls, floors, and ceilings. Outlines

(Continued from page 161)

(Continued on page 168)

NEW . . .

Full Color Ceramic Tile Booklet

Valuable planning help on School and Hospital jobs

Color photographs and tile descriptions for a variety of actual installations in schools and hospitals. The many ideas it contains for planning school and hospital jobs make this new booklet valuable for architects.

Send for your free copy today!

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1091 Cannon Ave., Lansdale, Pa.

Please send me a free copy of Booklet 600, "Tile for Schools & Hospitals"

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City_____ Zone_____ State_____

p/a manufacturers' literature

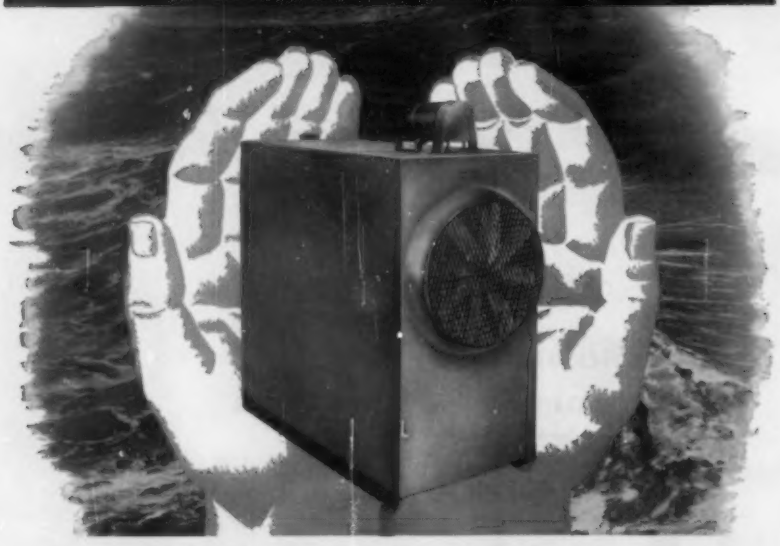
(Continued from page 167)

properties of material; gives drawings showing its installation; provides specifications. Baldwin-Hill Co., Trenton, N. J.

6-10. Insulation Guide, pocket-size guide giving resistance and U values of common roof constructions, both uninsulated and insulated with cellular-glass materials. Provides formula for calculating U value of completed roof; lists physical properties of cellular-glass insulation and permeability of construction materials to water vapor. Pittsburgh Corning Corp., 1 Gateway Center, Pittsburgh 22, Pa.

6-11. Simplex Acoustical Ceilings and Suspension System, AIA 39-B, 8-p. pamphlet containing information on flush-panel, aluminum, suspended-ceiling system. Drawings show installation of ceiling with recessed lighting fixtures, as wall-hung corridor ceiling, and as radiant-panel ceiling for warm-air circulation. Photos, construction details, specifications. Simplex Ceiling Corp., 552 W. 52 St., New York 19, N. Y.

HALSTEAD & MITCHELL
COOLING TOWERS



PROTECTED STEEL

for extra-long life!

Steel in cooling towers undergoes constant corrosive attack by both water and water treatment chemicals. H&M combats this rusting . . . adds *years to tower life* . . . by Protected Steel, a new concept in steel protection.

H&M steel cabinets are *hydraulically* painted with Vinsynite, Vinyl Zinc, and chlorinated rubber. Hydraulic painting *forces* these protections into openings . . . builds a solid wall against moisture. H&M fans and shafts are Stainless Steel, rust-proof, of course. Bolts are Everdur, for ease of future disassembly.

The Protected Steel concept is the concept of complete protection. That's what you get on every Halstead cooling tower.

and only HM *offers*

20-Year Guarantee!

on the wetted deck surface against rotting or fungus attack.

Write for Catalog WT & CT 583

HM Halstead & Mitchell

BESSEMER BUILDING • PITTSBURGH 22, PA.

sanitation, plumbing, water supply

7-9. Flush-Kleen Ejector Tables (123), 12-p. booklet offering engineering tables to simplify selection of clog-proof sewage ejectors. Gives procedure and sample problems used in determining inflow, discharge heads, and type of ejector for use in underground municipal stations, industrial applications, or building installations. Chcago Pump Co., 622 Diversey Pky., Chicago 14, Ill.

7-10. Answers to Many Cleaning Problems (154), 12-p publication explaining operation of stationary vacuum-cleaning system in large buildings. Outlines advantages of system; gives comparison of costs between stationary and conventional methods, based on initial outlay, maintenance, and labor. Also includes data on special cleaning apparatus for swimming pools, garage-exhaust systems, and special portable vacuums. Drawings, graphs. The Spencer Turbine Co., Hartford 6, Conn.

specialized equipment

8-9. Nelson Metal Letters, AIA 35-H-9 (54-10), 18-p. pamphlet illustrating architectural letters made in metal, plastic, and porcelain-enamel finishes. Scaled drawings show complete alphabet of six popular styles; includes data on special designs. Gives specifications, dimensions, and spacing chart; standard-color chart and mounting details. Nelson Metalcraft Co., 3036 W. Chicago Ave., Chicago 22, Ill.

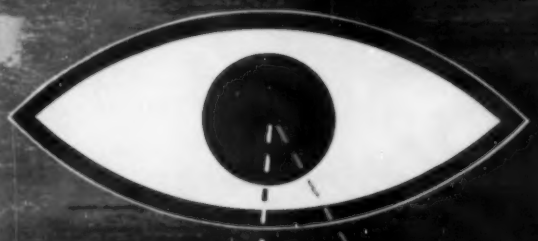
8-10. Schmidt Commercial Refrigerators, AIA 30-F-6, file folder containing 25 pages of data on refrigerators for commercial and institutional use. Describes freezers and cold-storage units, refrigerated display cases, and dual-temperature units. Also includes data on special case for bottled drinks. Drawings, dimensions, and specifications. The C. Schmidt Co., 1712 John St., Cincinnati 14, Ohio.

vertical traffic

10-5. Sedgwick Dumb Waiters, 8-p. pamphlet describing electrically operated dumb waiters. Gives data on conveyor designed for small restaurant installations; shows larger unit for multi-story buildings. Also contains information on parcel lifts, freight elevators, and manually operated residential elevators. Photos, dimensions, specifications. Sedgwick Machine Works, 150 W. 15 St., New York 11, N. Y.

interior furnishings

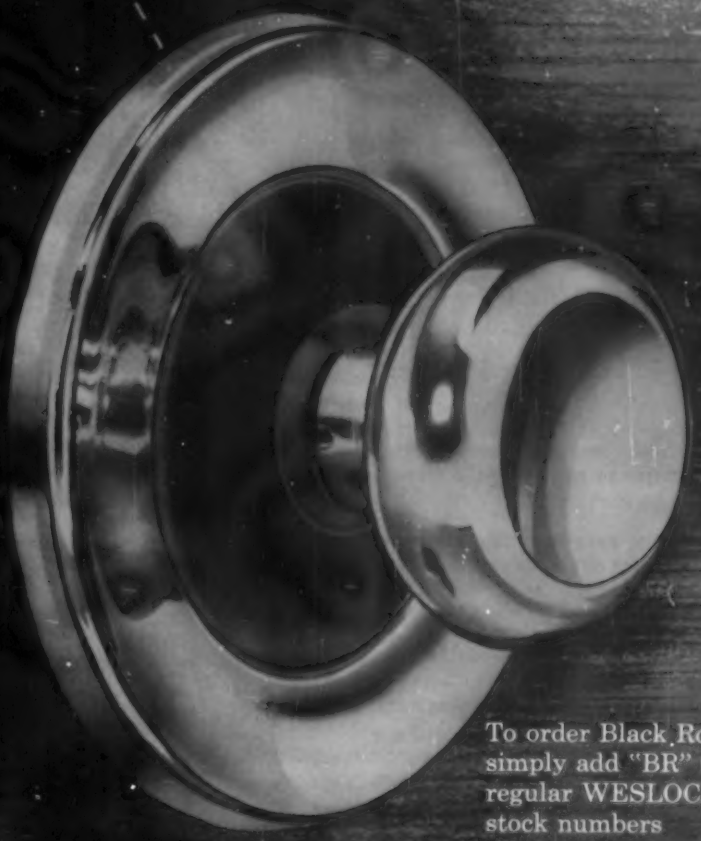
★ **11-4. Hil-Rom Contemporary Hospital Furniture,** 130-p. catalog of hospital furniture designed by Raymond Loewy and color-styled by Howard Ketcham. Photos, some in color, show four distinct lines of wood furniture finished in walnut, maple, cherry, oak, or korina. Includes information on safety items, ceiling tracks for curtains, and geriatric furnishings; gives data on line of institutional furniture for hotels or dormitories. Hil-Rom Co., Inc., Batesville, Ind.



all eyes are on
WESLOCK'S
Black Rose

Here is unique custom-styling at budget prices for every door in the house. All Weslocks in all finishes are now available with black rosettes at no extra cost.

Keep your eye on Weslock



To order Black Rose, simply add "BR" to regular WESLOCK stock numbers

WESTERN WESLOCK

WESTERN LOCK MFG. CO.

Manufacturers of Weslock Residential Locksets and Builders Hardware

GENERAL OFFICES: 211 NORTH MADISON AVE., LOS ANGELES 4, CALIF. • FACTORY: HUNTINGTON PARK, CALIF.

NEW! The "butter" that holds a ton per tile!

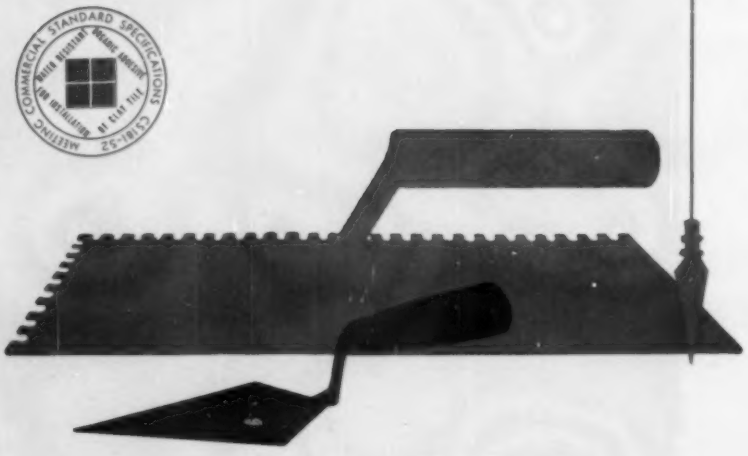
The easy-to-use clay tile adhesive that saves time, cuts costs up to 20% and more!

CTA 11

Here's the new, clean, quick way to set clay wall tile—the modern way to get luxury-tile results while cutting costs in the bargain.

It's CTA 11, the easy-spreading adhesive that is ready to go to work right out of the can. No premixing. A trowel is the only tool needed. And once this "butter" takes its grip on a tile, a full ton of stress can't remove it!

Now, you can specify a beautiful, lifetime clay tile installation on virtually ANY plumb surface—plaster, metal, cement block or dry wall—for new installations or remodeling jobs. CTA 11 is resilient and durable, too . . . resists cracks, moisture and settling. Architects, builders and tile contractors can start cutting costs by specifying and using CTA 11 now. For details on CTA 11—and its companion adhesive for tiling floors, CTA 12—write 3M, Dept. 156, 417 Piquette Avenue, Detroit 2, Mich.



MINNESOTA MINING AND MANUFACTURING COMPANY *ADHESIVES AND COATINGS DIVISION*

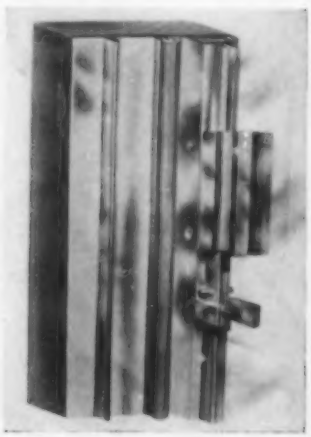
417 PIQUETTE AVE., DETROIT 2, MICH. • GENERAL SALES OFFICES: ST. PAUL 6, MINN. • EXPORT: 99 PARK AVE., N. Y. 16, N. Y. • CANADA: P. O. BOX 757, LONDON, ONT.

MAKERS OF "SCOTCH" BRAND PRESSURE-SENSITIVE ADHESIVE TAPES • "SCOTCH" BRAND SOUND-RECORDING TAPE • "SCOTCHLITE" BRAND REFLECTIVE SHEETINGS • "3M" ABRASIVE PAPER AND CLOTH • "3M" ADHESIVES AND COATINGS • "3M" ROOFING GRANULES • "3M" CHEMICALS

recent Ludman developments

Ludman's new intermediate, projected, aluminum windows (*left*) claim the following exclusive features: (1) truly modular window sizes as recommended by the AIA; (2) white-bronze corner braces for vents; (3) vent arm attached to jamb through threaded inserts; (4) mullion bars that provide calking pocket for weather-tight construction; (5) mullions fluted vertically for appearance and strength; (6) glazing beads in vent that do not require hold-down screws; and (7) intersecting muntin joint securely locked by screw for added rigidity and proper glass clearance.

Making their new aluminum sliding-glass doors suitable for practically all climatic conditions are such features as the exclusive two-piece sill, bulb-type weather seal in jamb frame, and unique latching system on both sides of doors (*below*). Ludman Corp., 14100 Biscayne Blvd., No. Miami, Fla.



Designed for use with gypsum wallboard constructions, this new Snap-On Trim (below) *is said to reduce the cost of trimming window and door openings by as much as 50%. No nails or special tools are required for installation. Snap-On Trim is delivered to the job with side sections having right and left mill-cut copings. Head sections are rough cut on the job from standard lengths. United States Gypsum Co., 300 West Adams St., Chicago 6, Ill.*

All-New American-Standard Kitchen

a b c d

Cabinets of Steel for lasting appeal. This kitchen sparkles with beauty and efficiency—and it's made of steel to give long years of service. These new kitchen cabinets are easy to install . . . a unique Snap-Lock assembly channel aligns the cabinets, clamps them together, and fastens the base cabinets to a separate, telescoping sub-base. Only a pair of pliers is needed for assembly!

Wide Selection of cabinets and accessories. You can get American-Standard kitchen cabinets in a range of sizes and styles for greater flexibility in planning. New features include: handy hanging shelves, adjustable wire shelves in wall cabinets, corner cabinet with revolving shelves, high utility cabinet with sliding shelves for appliances, cabinets for built-in oven and range surface units.

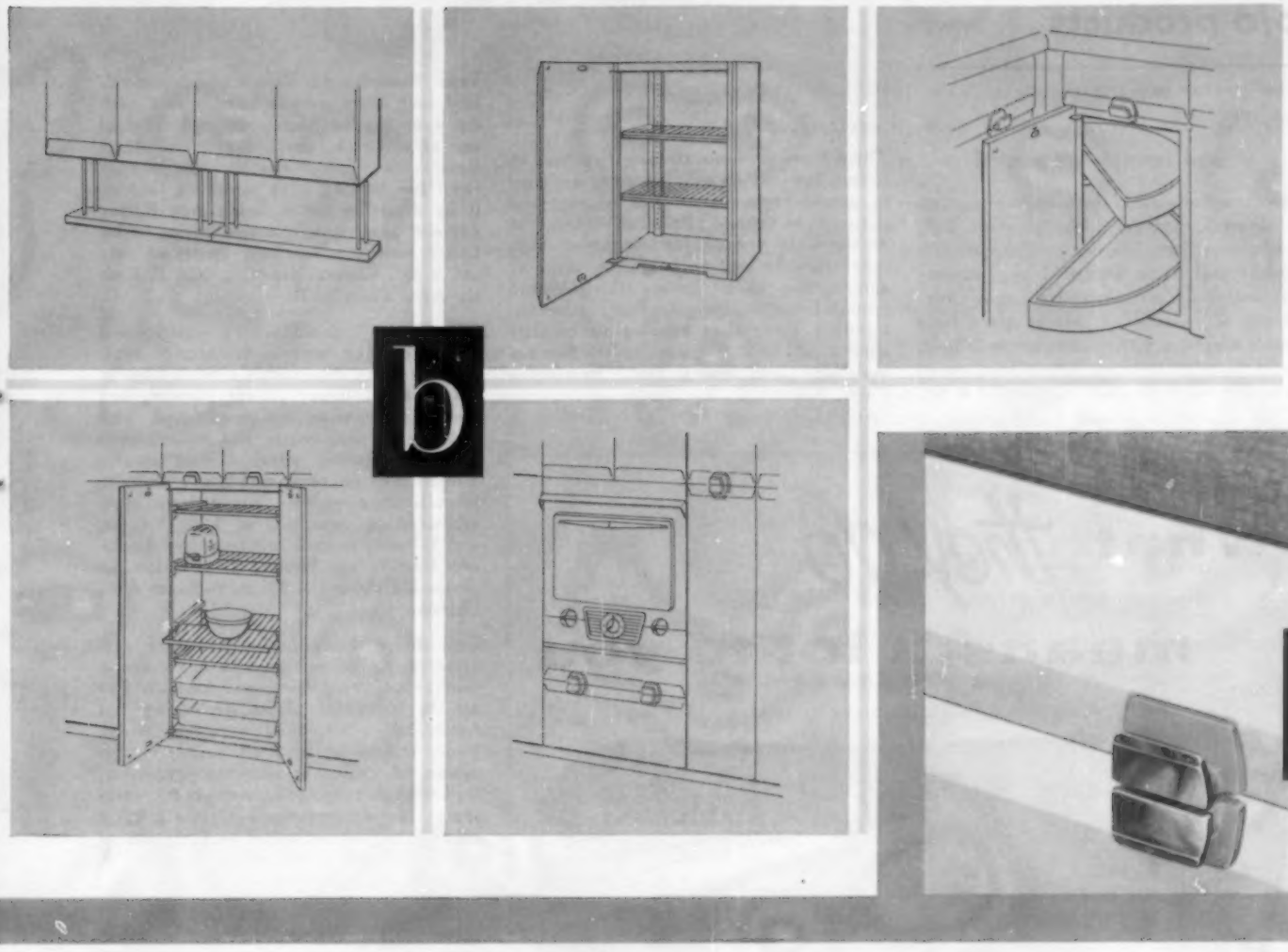
Color Accents. For an extra and easy-to-change touch of color, cabinet handles are backed up with plastic color-guards. These attractive color-guards are available in six colors, to harmonize or contrast with colors of the Micarta counter tops and famous American-Standard sinks. They protect the cabinet finish, can be quickly changed at any time, offer flexibility in kitchen decorating.

Cabinet Convertibility. This exclusive American-Standard feature lets the housewife change the shelf and drawer arrangements in her base and undersink cabinets, quickly and easily to meet her storage requirements. Sliding wire shelves and drawers can be added or rearranged at any time in dozens of combinations. And wall cabinet shelves are adjustable at one-inch intervals.

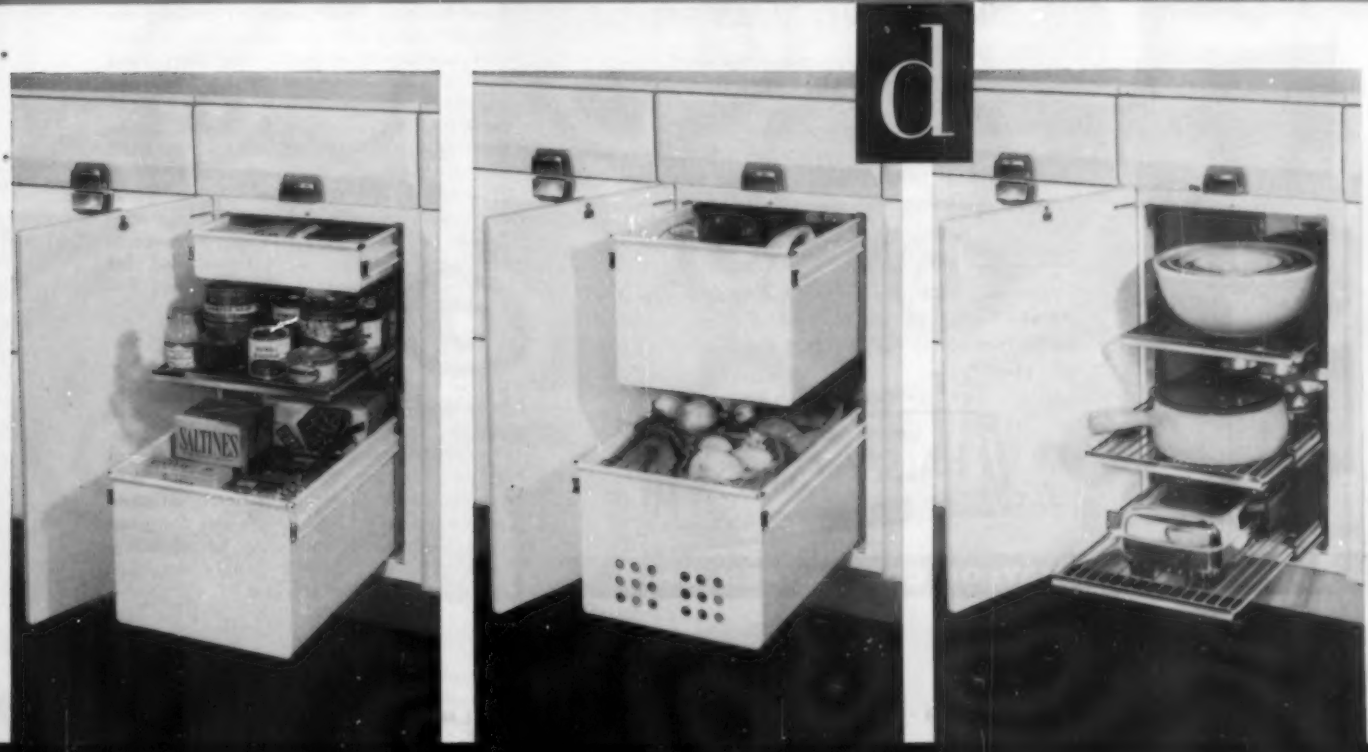
Another example of the many quality products made by the Plumbing and Heating Division of American Radiator & Standard Sanitary Corporation, P. O. Box 1226, Pittsburgh 30, Pa.

AMERICAN-Standard

Serving home and industry: AMERICAN-STANDARD • AMERICAN BLOWER • CHURCH SEATS & WALL TILE • DETROIT CONTROLS • KEWANEE BOILERS • ROSS EXCHANGERS • SUNBEAM AIR CONDITIONERS



...a study in function and design



p/a products

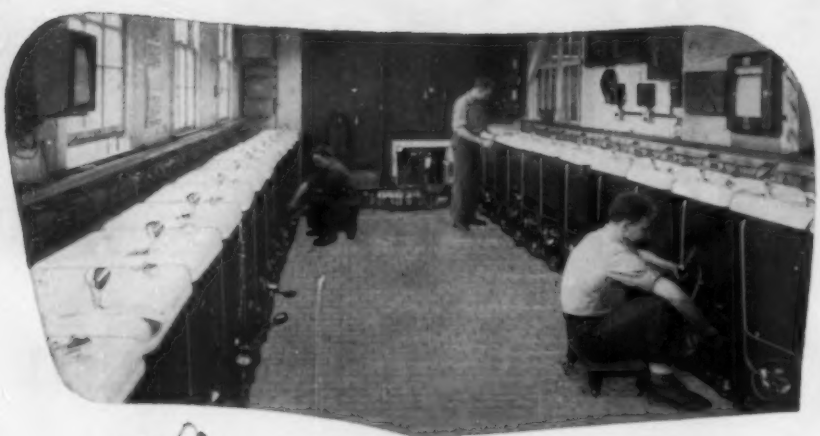
(Continued from page 171)

air and temperature control

Herman Nelson "Light Stop": enameled-steel strip, five in. high, prevents light infiltration in classrooms equipped for audio-visual aids. Designed as accessory for unit ventilators, steel strip runs entire length of windows. It blocks glare from under blackout curtains and prevents them from flapping. Herman Nelson Div., American Air Filter Co., Inc., Louisville 8, Ky.

Third-Way Air-Conditioning System: efficient, low-cost air conditioner is designed to provide summer cooling in most-used portions of home. Minimum amount of ductwork is needed for air-cooled unit, even when located in basement, attic, or garage. One cabinet houses all equipment required for conditioning air; manufactured in three sizes ranging in capacity from 11,600 to 22,000 Btu per hr. Remington Air Conditioning Div., Remington Corp., Auburn, N. Y.

what *they do*
means a lot to you



.... when specifying
DRINKING-WATER
EQUIPMENT

Here you see men testing, hour after hour . . . for capacity, for leakage, for accuracy of temperature and refrigerant controls, for correct setting of expansion valves . . . for every factor that can mean the difference between dependability and uncertainty.

It's factory-tests like these that make the Halsey Taylor nameplate your guide to assured performance, no matter what cooler or fountain you specify!

HALSEY TAYLOR

AS-42

THE HALSEY W. TAYLOR CO., WARREN, OHIO

Year 'Rounder Air Conditioner: centralized unit offers greater heating and cooling economy in homes through efficient use of relatively small equipment. Automatic zone control enables unit usually rated for 1000 sq ft to condition 1800 sq ft by diverting air to living area during day and to sleeping quarters during night. Entire unit requires floor space of only 26″ x 30″. Rheem Mfg. Co., 7600 S. Kedzie Ave., Chicago, Ill.

"Royal-Aire" Conditioner: water-cooled air-conditioning unit is completely redesigned to give dependable service. Greater fan capacity, larger blower plenum, and thermal insulation are engineered with addition of duct system and heating coils in mind. Special safety feature insures minimum of gas remaining at low pressure in coils when machine is shut down. Manufactured in capacities of 3, 5, 7½, 10, and 15 tons; housed in newly styled cabinet. Heating and Cooling Div., Union Asbestos & Rubber Co., 332 S. Michigan Ave., Chicago, Ill.

Cyclotherm Boiler: new hot-water generator is easily converted to steam operation by adjusting automatic controls. For use in industrial plants heated by hot water, but occasionally requiring steam, boiler is fired by light oil, gas, or combination of both. As hot-water generator, unit delivers two million Btu per hr, working at 30 psi; as steam generator it gives 2000 lb per hr at operating pressures of 15 to 200 psi. Cyclotherm Div., U. S. Radiator Corp., Oswego 1, N. Y.

construction

"Steplap" Fiberglas Panel: translucent building panel features addition of scientific formula to screen heat and glare. To facilitate fastening to structural framework, stepped panel is formed with one-in. flat surface on each lap. Glass-fiber panels are 10⅓′ long, 31½″ or 41½″ wide, with 5″ steps; available in five new shades of yellow, coral, blue, green, and white. Alsynite Co. of America, 4654 De Soto St., San Diego 9, Calif.

Load-Bearing Wall System: prefab, aluminum wall panels are engineered to carry roof loads without additional supporting members. Available for one- or two-story buildings, panels include integral structural framing, windows, doors, and insulation; specially made trusses for flat, shed, or ridge roofs rest on panel heads. Variety of exterior facings in extruded or sheet aluminum, as well as selection of interior panels, is offered. Building components can be dismantled and reassembled for moving. Aluminum Structures, Inc., 633 Washington Rd., Pittsburgh 28, Pa.

doors and windows

Ualco Sliding Window: extruded-aluminum sliding sash is designed for installation in horizontal bands at eye level. Frames are assembled with stainless-steel screws to insure strength and rigidity; continuous weatherstripping is firmly attached to sash tracks. Windows lift out for complete ventilation and ease of cleaning. Southern Sash Sales & Supply Co., 818 Twentieth St., Sheffield, Ala.

marble teams with
aluminum in this
unusual curtain wall by

CUPPLES

The versatility of Cupples aluminum "skin" construction is dramatically demonstrated in this magnificent building now under construction in Topeka.

Entire framework and interior lobby treatment are aluminum in clear alumilite finish—designed and fabricated by Cupples. Panels are marble set in aluminum frames.

Specially designed aluminum windows are Cupples 1300 Series—top-hung, inswinging, double weather-stripped, with tubular sash. Clean from the inside.

Structurally sound and economical, Cupples aluminum curtain walls are equally effective with panels of aluminum, stainless steel, structural glass, porcelain enamel and other acceptable materials.

High standards of design and manufacture have established Cupples' leadership in engineering curtain walls as in the fabrication of aluminum windows, doors, architectural aluminum extrusions and special ornamental products. Our catalogs are filed in Sweet's.

KANSAS STATE OFFICE BUILDING
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JOHN A. BROWN, STATE ARCHITECT
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SKYLIKE Skyceil –

KYCEIL Area-Lume Lighting Systems have been conceived and designed in line with the increasing importance of complete area illumination. The trend in modern architectural design with its simplified large interior areas points up the need for this type of lighting.

The problem has been approached with several basic requirements in mind. To begin with, the system must be one that is readily adapted to a multiplicity of architectural design requirements and ceiling materials. Installation must be simple, economical and adaptable to any ceiling construction. It must provide the quality of light and type of over-all distribution essential for area illumination. And, it must be designed to achieve architectural harmony—an integral part of the plan, and not an "added appendage of lighting."

SKYCEIL is the answer — as its many and highly successful installations prove. Architects, contractors, lighting engineers and all concerned with this modern lighting trend will find its detailed story of great interest and value. To get your copy of the "Skyceil Story" (soon off press) send in your request now to get on the preferred first-mailing list. Or if you have any immediate questions, send them to our New York Office for a quick reply.

*AREA-LUME LUMINOUS OVERALL CEILING LIGHTING BY

A NEW CONCEPT IN AREA-LUME* CEILINGS

Combining Silvered Bowl and Fluorescent Lamps

SKYCEIL FEATURES

- Permits combination of silvered bowl incandescent lamps and fluorescent lamps in any ratio or combination.
- Complete structural ceiling grid to support lighting elements and standard acoustical materials.
- Offers unlimited design possibilities from complete ceiling of light to tailor-made luminous panels surrounded by opaque acoustical areas.
- Conditions of building surfaces above the ceiling level does not affect the illumination.
- Accessories available for introduction of accent or special purpose lighting element.
- Will fit areas of any dimension.

LIGHTING ADVANTAGES

EFFICIENCY:

Performance data under typical service conditions shows Skyceil combination system to be 30% to 40% more efficient than conventional luminous ceilings using fluorescent lamps alone. This increase in efficiency results from more efficient distribution and control of light by the Skylike silvered bowl fixtures, and from considerably lower depreciation losses.

MAINTENANCE:

Skylike units which comprise the basic lighting element are designed to be relamped from the floor using pole type lamp changers. The silvered bowl lamp carries its own sealed reflector and each relamping restores the unit to initial efficiencies. Occasional cleaning of the Skylike reflectors is easily accomplished.

COMFORT:

Skyceil offers a new comfort factor in lighting by eliminating the unpleasant contrast in brightness of lighted fixtures against adjacent unlighted ceiling backgrounds. Skyceil provides a complete structural framework for recessed fixtures in which the surrounding adjacent areas are softly luminous, eliminating all unpleasant brightness contrasts.

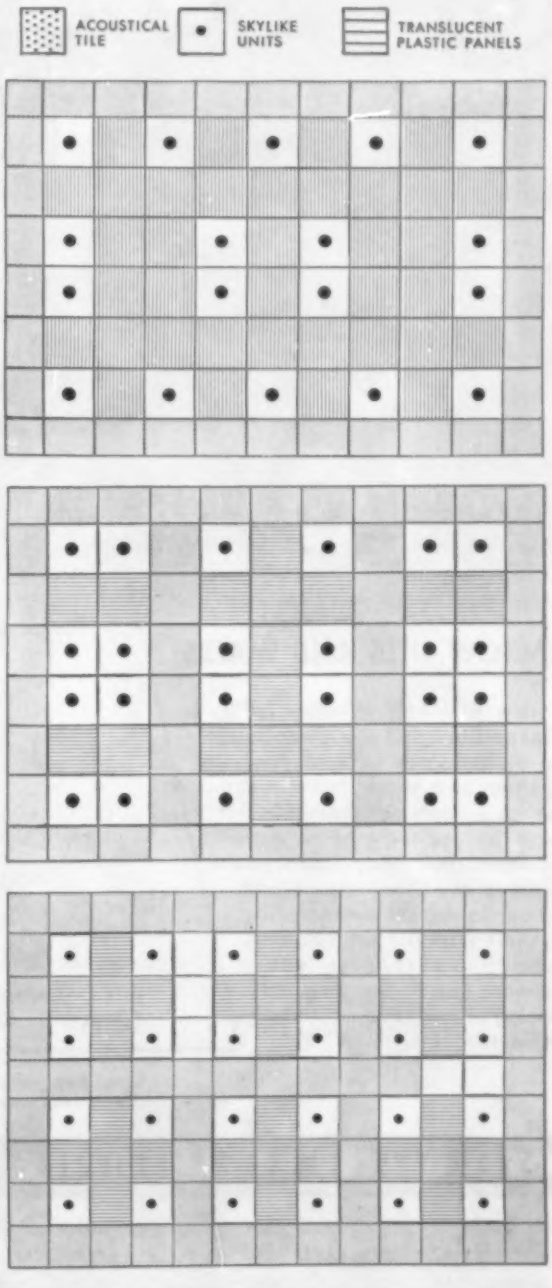
SKYCEIL LIGHTING SERVICE

This service offers actual plans whereby the Skyceil System can be installed economically to meet any structural or decorative requirement and also provide the desired illumination. Just send us details and ceiling plan—We'll do the rest. No obligations.

SKYLIKE
LIGHTING, INC.
A SILVRAY ASSOCIATED COMPANY
RKO BLDG. • RADIO CITY • NEW YORK

DESIGN POSSIBILITIES

Lighting elements may be varied to suit requirements. An infinite variety of silvered bowl incandescent and fluorescent combinations are possible to provide any range of lighting levels desired in any size area.



out of school

by Carl Feiss

"Impossible? No: for however far modern science and technics have fallen short of their inherent possibilities, they have taught mankind at least one lesson: Nothing is impossible."

Lewis Mumford: Technics and Civilization

This is again my annual Commencement address to the graduates of the schools of architecture and of planning. I hope that a few parents, teachers, and practitioners will feel free to listen in. I have been giving these addresses for so many years, now, that I feel as though I could apply for the position of Valedictorian Emeritus of the architectural schools—with a reasonable chance of obtaining it.

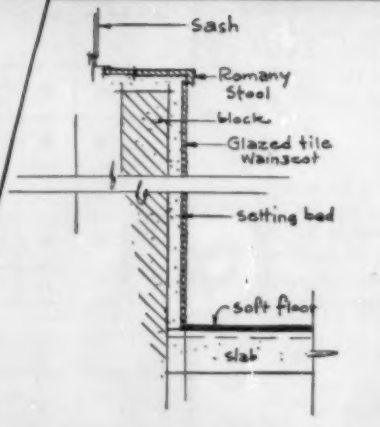
I hope that as soon as you have your sheepskin in hand you will pack up and hitchhike out to Minneapolis to the AIA Annual Convention. Granted that you may not yet be a member, you will still be welcome, and this year's meeting ought to be a good one. Of course, I have always felt that graduation from an accredited undergraduate architectural school should automatically qualify a man for a training membership in the AIA—as one step above a student membership, which should be automatic in every student chapter in every school. Further, upon completion of a graduate architectural course, a student should automatically qualify as a professional affiliate AIA member, in which position he could remain until he is ready for full membership. In this way, we would be able to develop at an early date the appropriate and necessary interest in and loyalty to our important central organization. Student attendance at annual national meetings, regional meetings, and chapter meetings would be both natural and personally significant to the student. Furthermore, such attendance would constantly vitalize the meetings and provide to the AIA itself a better and more regular flow of young blood than it now obtains. The American Institute of Planners could well consider a similar system. All this is valuable in the context of a professional and scientific world which is strongly organization-conscious.

The subject of the Minneapolis meeting is challenging. It has to do with the replanning and rebuilding of our old cities and the planning and building of new ones. I have talked to you about this many times. I have mentioned the slowness with which our architects have moved, in taking an interest in city rebuilding at home and abroad. I have mentioned the one-building-at-a-time mentality that has been creating buildings (not architecture) in a nonexistent vacuum for

(Continued on page 182)

TILE FOR SCHOOL WINDOW SILLS AND WALLS

The new ROMANY Window Sill Tile makes possible, and economical, a surface of the same general color as other trim in a school room. It provides an exceptional cleanable flat smooth surface for exhibits. Available in all Buff Body colors and priced to readily compete with most permanent sill materials. The ROMANY Wall Tile will withstand the scuffing of children in the classroom, also the bumping and ramming of mops and polishing machines.



CLASS ROOM WALL

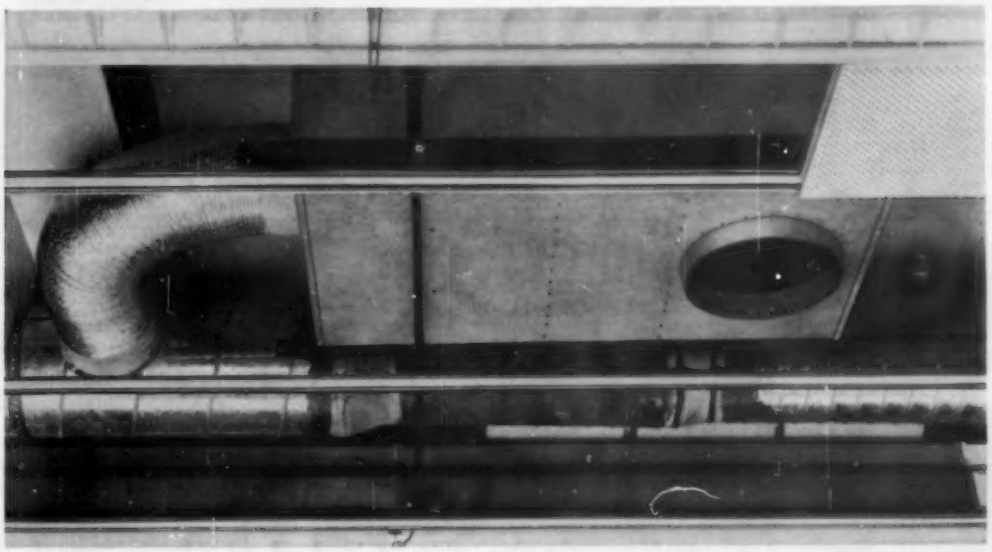
Every Architect should have our Sample Tile Chart No. 15. It's free.

UNITED STATES CERAMIC TILE COMPANY

Member: Tile Council of America and Producers' Council, Inc.

217-G FOURTH ST., N.E., CANTON 2, OHIO

UNION CENTRAL Annex Building, Cincinnati, utilizes some 200 Kno-Draft High Pressure Air Diffusers for quiet, draftless, comfortable air distribution.



BEHIND THE SCENES photo shows typically compact Kno-Draft single-duct system. Note flexible connectors. Outlets at same level as ducts explain why...

High Pressure Saves Space

Space saving, of course, is only one advantage of high pressure air transmission. But it's important. High building costs make it worth while to reduce space allotted to air ducts; and in existing structures, small high pressure ducts have permitted central system air conditioning where space limitations prohibited conventional designs.

Additional advantages of Kno-Draft high pressure systems are: (1) flexibility to meet changes in air conditioning requirements without modifying the system, and (2) individual room temperature control from central station systems.

Kno-Draft High Pressure Air Diffusers are especially designed to handle air at branch duct velocities up to 3,000 feet per minute. Outlets are equipped with dampers and sound traps to eliminate noise. System provides even temperatures throughout the area *without drafts.*

For a full description of Kno-Draft High Pressure Air Diffusers and layouts for typical systems, read the Connor textbook on the subject. Write on your letterhead for a copy of Bulletin K33. Connor Engineering Corporation, Dept. N-65, Danbury, Connecticut.

see our catalog in Sweet's ARCHITECTURAL FILE or write for copy

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adjustable air diffusers

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Versatile

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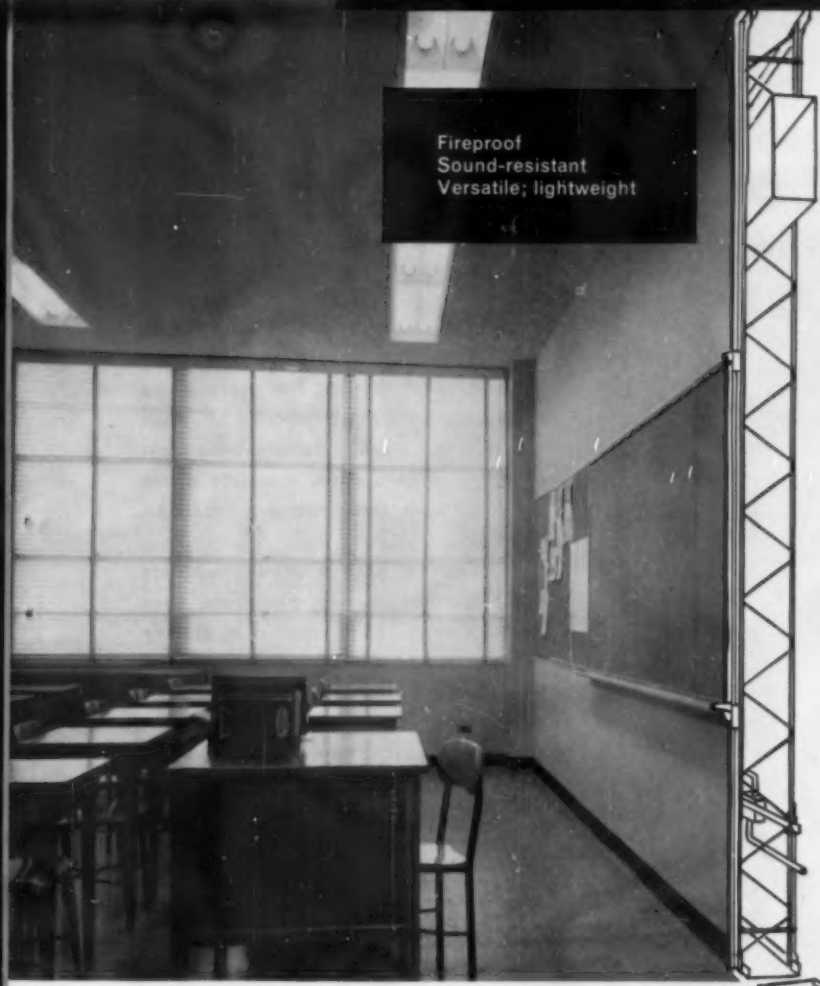
can help cut costs!

Complete information

For full details about these and other U.S.G. wall and ceiling systems, contact your U.S.G. Architect's Service Representative; see Sweet's, sections 11/a, b, c, d; or write Dept. PA-3, 300 W. Adams St., Chicago 6.



FOR HOLLOW PARTITIONS

TRUSSTEEL* STUD-ROCKLATH* SYSTEM

The open-web design of non-load bearing TRUSSTEEL Studs permits quick, low-cost installation of mechanical services horizontally or vertically without weakening the partition structurally by chasing. And with no more than fingertip pressure, TRUS-LOK Clips anchor either plain or perforated ROCKLATH* Plaster Base to the studs *in seconds*, further saving valuable time and labor.

FOR SUSPENDED CEILINGS

BRACE-TITE* LATHING SYSTEM

Attaches ROCKLATH to standard metal grillage not more than 16″ o.c. The spring action of the BRACE-TITE* Clips supports the ROCKLATH PLASTER BASE across its full width increasing its rigidity. The wire clip embedded in the plaster actually strengthens the lath and plaster assembly.

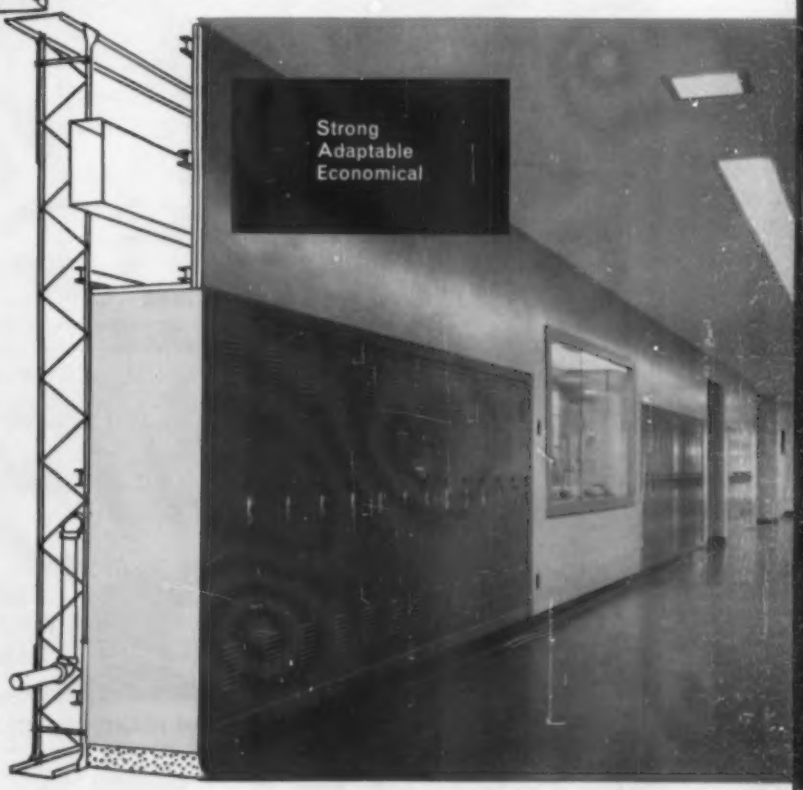
*Exclusively owned trade mark

CLASSROOMS—Specify TRUSSTEEL STUD-ROCKLATH Partitions . . . for required fire protection . . . for extraordinary quiet (up to 48.0 db sound transmission loss ratings) . . . for various wall thicknesses . . . for light weight which can mean savings in structural framing.

CORRIDORS—Specify TRUSSTEEL STUD-ROCKLATH Partitions . . . for strength from steel studs of efficient truss design . . . for simplified concealment of pipes, ducts, conduits . . . for low material costs and economical erection.

CEILINGS—Specify the BRACE-TITE ROCKLATH Lathing System . . . for easy, low-cost installation . . . for rigid, full support of the lath . . . for fire-rating up to 4 hours . . . for vapor resistance of 0.79 perms when insulating ROCKLATH is used as the plaster base.

NOTE: a special BRACE-TITE Clip is available if acoustical tile is to be cemented directly to the ROCKLATH.



UNITED STATES GYPSUM

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STEEL
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With the coiling upward action of the interlocking steel-slat curtain, originated by Kinnear
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A protective, attractive openwork of steel bars and links—admits light, air and vision
Kinnear Motor Operators
Special rugged motors for time-saving push-button door operation
Kinnear Rol-TOP Doors
Sectional upward-acting wood or all-steel doors with any number of panels for glass
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City_____ Zone_____ State_____

out of school

(Continued from page 178)

so many years. And, step by step, I have tried to keep you abreast of the changing atmosphere of the last five years as we have moved through programs of urban planning and redevelopment into our first primitive steps towards complete urban renewal and a comprehensive urban architecture.

I am sorry to have to say to you at this time, just before they hand you your diploma, that your education is already out of date! It is as out of date as mine was when I graduated 24 years ago. Don't misunderstand me. I am not saying it was wasted—at least, I hope your hard-working professors were not wasting their time on you. It is just that technology moves so fast that schooling cannot possibly keep up with it. And you are going to have to work fast *on your own* to keep up with it out of school. Don't depend on me either. I'm not a reliable source of anything but trouble.

Let me give you a couple of examples of what I am talking about. Last April, just at Easter, I think it was, there were two almost simultaneous fabulous announcements in the papers. One was a story about the approval of the financing and construction of several nuclear energy power plants to be located in widely dispersed spots in the nation. The other had to do with a fantastic little gadget, a one-man-controlled flying saucer, developed by the Navy, and capable of vertical flight.* About five years from now, my guess is that these two quite different things are going to become worth watching. Ten years from now they can well be revolutionary.

Let us consider the little flying saucer first. In the newspaper picture a man was standing alone with his hands on the rail of a small circular platform hovering a few feet in the air. He controlled the angle of flight by simply leaning on the rail. Now we all recognize that the modern airplane is still a pretty crude gadget when it comes to taking off and landing. It does fairly well in the air—particularly those little turbo-jet fighters. But like a

(Continued on page 186)

* See also *Collier's*, April 29, 1955: "The Navy Comes Up with a Real 'Flying Saucer.'"

Look at the company behind your doors!

WHEN you specify or buy Mengel Doors, you get a *Guarantee backed by the world's largest manufacturer of hardwood products.** Mengel has "been here" for seventy-eight years, and builds all its products to the high standards required by a company which expects to be here *another* seventy-eight years.

This *means something* to you — for yourself, your clients, your customers. Mengel Doors are available in three different types, for every kind of job, "Palace or Project". *Each is competitively priced.* Write for complete information.

Door Department
THE MENGEL COMPANY
Louisville 1, Kentucky

* Mengel products include nationally-advertised Mengel Permanized Furniture, Mengel Kitchen Cabinets and Mengel Wall Closets.

you see things better with this new

Glass

New *twin-ground* Parallel-O-Plate Glass is the most distortion-free plate glass ever made in America. Yet in most localities it *costs no more* than regular plate glass.

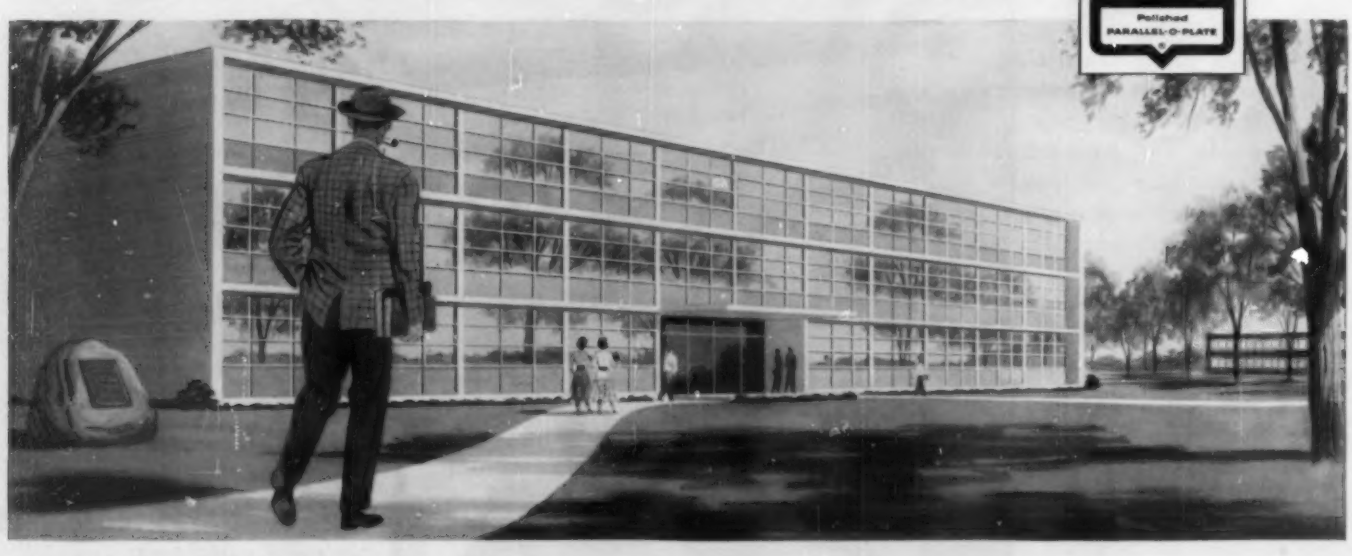
When you consider all of the things, every day, that you see through glass, you can see how important it is to insist on *Parallel-O-Plate* Glass.

For your windows, you can get Parallel-O-Plate from any Libbey·Owens·Ford Distributor or Dealer, listed under "Glass" in the yellow pages of phone books. For mirrors made of Parallel-O-Plate, see your department store, furniture store or mirror dealer. For additional information on *twin-ground* Parallel-O-Plate Glass, write to Dept. 8365, Libbey·Owens·Ford Glass Company, Toledo 3, Ohio.

L·O·F Parallel-O-Plate Glass

Finest plate glass made in America . . . only by

LIBBEY·OWENS·FORD *a Great Name in Glass*



LOOKING AT windows of Parallel-O-Plate Glass, you see how much its truer reflections mean to exterior appearance.

LOOKING IN through the Parallel-O-Plate Glass in a storefront, you hardly know the glass is there.

LOOKING OUT of your window wall of Parallel-O-Plate *Thermopane** Insulating Glass, you see the scene as it *is*. **

Boulevard Presbyterian Church, Euclid, Ohio. Architect: Dalton-Dalton Associates. Contractor: L. M. Gundersen, Cleveland.

perfect atmosphere for worship— Tectum® roof deck

Spacious, quiet beauty, the perfect atmosphere for worship, is created at Boulevard Presbyterian Church by wise use of Tectum Roof Deck.

Nine-value Tectum deck, the underside spray-painted to specification, blends attractively with soothing pastel sidewalls and rich natural wood arches in this modern interior. Tectum lets churchgoers enjoy clarity of sound and the comfort of all-season insulation.

Surely, Tectum stretched the building fund. It will keep maintenance costs down due to greater stability than most building materials plus its inherent resistance to termites, fungus, and rot. Noncombustible Tectum affords high structural load capacities, yet weighs only about two lbs. per board foot. Eleven stock sizes and four thicknesses are available in this easily worked, quickly erected roof decking material.

SEE IT NOW! Ask for 1955 technical data or refer to Section 2e/Te, Sweet's Architectural File.

Tectum® Div.
The Alliance Manufacturing Company
NEWARK, OHIO

TECTUM DIV.
100 South Sixth Street, Newark, Ohio

_____ Please send Technical Data

Name _____ Title _____

Address _____

City _____ Zone ___ State _____

out of school

(Continued from page 182)

sea lion, which is as streamlined as nature can make it and as marvelously efficient in water as the plane is in the air, the man-made air machine is not much good on land. And the air machine is always awkward taking off and landing. Great strides have been made in the development of the helicopter but it presents formidable obstacles to swift flight and quick maneuvering. Now conceive what could happen if the fan unit just invented in the little flying saucer were insertable in the wings and body of a large plane or a small speedy one. Up we go and when we get to our altitude, off we zoom into the yonder, to drop gently down on the top of the proper dandelion at our destination. All of a sudden, our Idlewilds and all the other huge airports become obsolete. We still will need space to land, just as we need places to park our cars. But all we have to do is jack up the center of our butterfly roof and provide a comfortable stair or an escalator or elevator, depending on where we are, and there we are.

The new fluidity of movement of people and goods will have a direct effect on community planning and building and on architecture. It would be a wise precautionary measure for the comprehensive architect to let his fancy roam—and quickly because there is not much time.

Now combine the above concept with what is happening in nuclear science. Nuclear power for public utility purposes is in the immediate offing. At this moment, 22 groups of major companies are investing in atomic research under special "study agreements" with the AEC, and nine companies, including four public utilities, are studying nuclear power plants, also with agreements with the AEC. Almost daily *The Wall Street Journal* reports on new nuclear industrial potentials. The sky is the limit again.

Several things are going to happen. The Glenn L. Martin Company is now ready to build a prefabricated "package" reactor. It will be expensive for a while, of course, but in mass production should be available at reasonable prices for a

(Continued on page 190)

TIME

Proves THAT Advance LEADS IN BALLAST DESIGN

1948 Advance originates compact, light-weight Lead-Lag slimline lamp ballast design.

1950 Improved Series — Sequence slimline lamp ballast design created by Advance engineers.

1950 Advance Series — Sequence design becomes standard for the lighting industry.

1954 Advance Lead-Lag design recognized as lighting industry standard.

1955 Origination by Advance of revolutionary 96-T-12 Rapid Start lamp ballast. More compact . . . lighter in weight . . . maximum efficiency.

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WORLD'S LARGEST MANUFACTURER
DEVOTED *Exclusively* TO THE PRODUCTION OF
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MOST ARCHITECTS AND ENGINEERS PREFER NOT TO USE SUBSTITUTES... *now they Specify Genuine . . .*

DUR-O-WAL

Backbone of Steel for EVERY Masonry Wall

YOU can depend on top performance with genuine Dur-O-waL on the job. Electrically welded of high tensile steel, Dur-O-waL works fast, lays flat to combat cracks in brick, block, or tile masonry. Dur-O-waL's patented trussed design keeps side rods working together; put more steel in the wall economically. Increase sales and customer satisfaction the proven Dur-O-waL way. Demand Dur-O-waL . . . available everywhere.

• Architects everywhere are specifying Dur-O-waL, the customer-designed reinforcing member that gives masonry walls a backbone of steel. Welded in a single plane, Dur-O-waL assures a tight, neat mortar joint.

Butt-Weld • Trussed Design

DUR-O-WAL

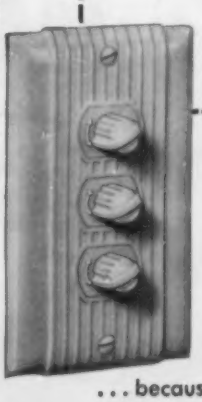
the Backbone of Steel for EVERY masonry wall

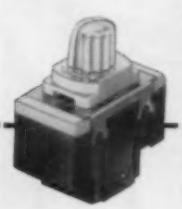
SYRACUSE 1, N.Y.	Dur-O-waL Products, Incorporated, Box 628
TOLEDO 5, OHIO	Dur-O-waL, Incorporated, 165 Utah Street
BIRMINGHAM 7, ALA.	Dur-O-waL Products of Ala. Inc., Box 5446
PHOENIX, ARIZ.	Dur-O-waL Div., Frontier Mfg. Co., Box 49
CEDAR RAPIDS, IA.	Dur-O-waL Div., Dept. 1-A, Cedar Rapids Block Co.

Modern beauty

For modern buildings, specify P&S Roto-Glo . . . the only truly modern light switch. Combines functional design . . . feather-quiet operation . . . *glows in the dark.* Precision-built mechanism . . . 15 Amp, 277 Volts A.C. . . . designed to handle fluorescent loads with ease.

Write Dept. PA for the complete Roto-Glo story.





Available in P&S Despard and conventional strap types

it's a ROTO switch
it's a LUMINOUS switch
it's a QUIET switch

NEW ROTO-GLO Trade Mark
Quiet Switch

. . . because switches should be SEEN . . . not heard

PASS & SEYMOUR, Inc., Syracuse 9, New York
71 Murray St., New York 7, N. Y.
1229 W. Washington Blvd., Chicago 7, Ill.

2,200 GUTH TROFFERS CREATE AN "ACRE OF LIGHT" AT LOVEMAN'S

Shoppers are greeted by a store full of lighting that says "come in and buy" as they enter Loveman's Department Store, Montgomery, Alabama.

Nicknamed "an acre of light", this beautiful new store has over 86,000 sq. ft. of sales area. Every inch is efficiently lighted by 2,200 Guth Recessed Troffers and 265 Guth Tile-Lites. Tile-Lites were used between fixtures and at row ends for added interest in the long lines of light.

This striking troffer installation looks as if it were custom-made for Loveman's. The fixtures blend harmoniously with the modern decor. Gleaming snap-on trim hides flange screws and "teebar gap" for a distinctive, tailored appearance. The effect of "arrow-straight lines of light" was made possible by the precision alignment of the troffers.

In a job this size, installation work is a big factor. According to the electrical contractor, this "acre of light" was . . . a breeze . . . one man could have handled it! The fixtures arrived in complete units . . . ready to mount. They fitted the "tile-wide" openings perfectly.

The troffers, with 35° x 30° metal eggcrate shielding provide 40 F. C. halfway between rows. Readings were taken at 34" above the floor.

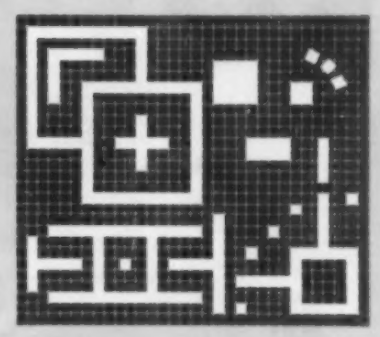
Another factor in the choice of Guth Troffers was maintenance economy. They have hinged shield frames for easy relamping or cleaning. Slide-in reflectors are simple to remove. Electrical apparatus may be replaced without taking troffers down.

Loveman officials give a great deal of credit to Guth Lighting for making their store a pleasant place to work, to shop . . . and to make profits!

Loveman's is part of the new Normandale Shopping Center—33 shops and stores, all lighted with Guth Troffers. It was developed by Aronov Realty Co., Inc.; Architect, Sherlock, Smith & Adams; Electrical Engineer, J. L. Phillips; Electrical Contractor, Long & McGhee Elec. Co.; General Contractor, Jehle Brothers, Inc.; Distributor, Noland Company, Inc.

Guth

LITE-BLOX TROFFERS
for sparkling lines of efficient light in any office or store
(See Loveman Article at left)



The most complete troffer line—

2 x 2's, 2 x 4's, 4 x 4's for unlimited pattern planning.

All types of shields from GrateLite* Louver-Diffuser to the new Paraflector and "Ro-Lo-B" Louvers.

WRITE ON YOUR LETTERHEAD TODAY FOR BIG NEW GUTH TROFFER CATALOG 50-BB FREE!

THE EDWIN F. GUTH CO.
ST. LOUIS 3, MO.

Guth

TRUSTED name in lighting since 1902

*T. M. Reg. U. S. & Can. Pats. Pend.

464

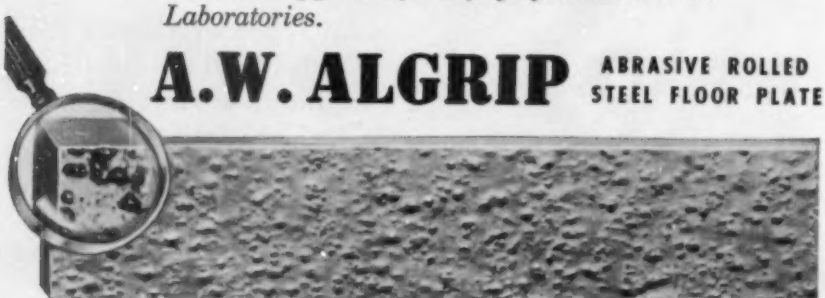
The SAFETY ENGINEER knows

. . . that A.W. ALGRIP Abrasive Rolled Steel Floor Plate eliminates costly slipping accidents.

He knows, too, that neither oil nor grease nor water can reduce the gripping power of ALGRIP's deeply embedded abrasive. ALGRIP, the *only* abrasive rolled steel floor plate, slashes insurance costs . . . requires no maintenance . . . and—because it is steel—gives many years of economical safety under heavy loads and abuse.

ALGRIP—*approved for safety by Underwriters' Laboratories.*

A.W. ALGRIP ABRASIVE ROLLED STEEL FLOOR PLATE



ALAN WOOD STEEL COMPANY
Conshohocken, Pa.

Please send A.W. ALGRIP Booklet AL-33

Name_____

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Address_____

City_____ Zone_____ State_____

Other products: A.W. SUPER-DIAMOND Rolled Steel Floor Plate—Plates—Sheets—Strip—(Alloy and Special Grade

out of school

(Continued from page 186)

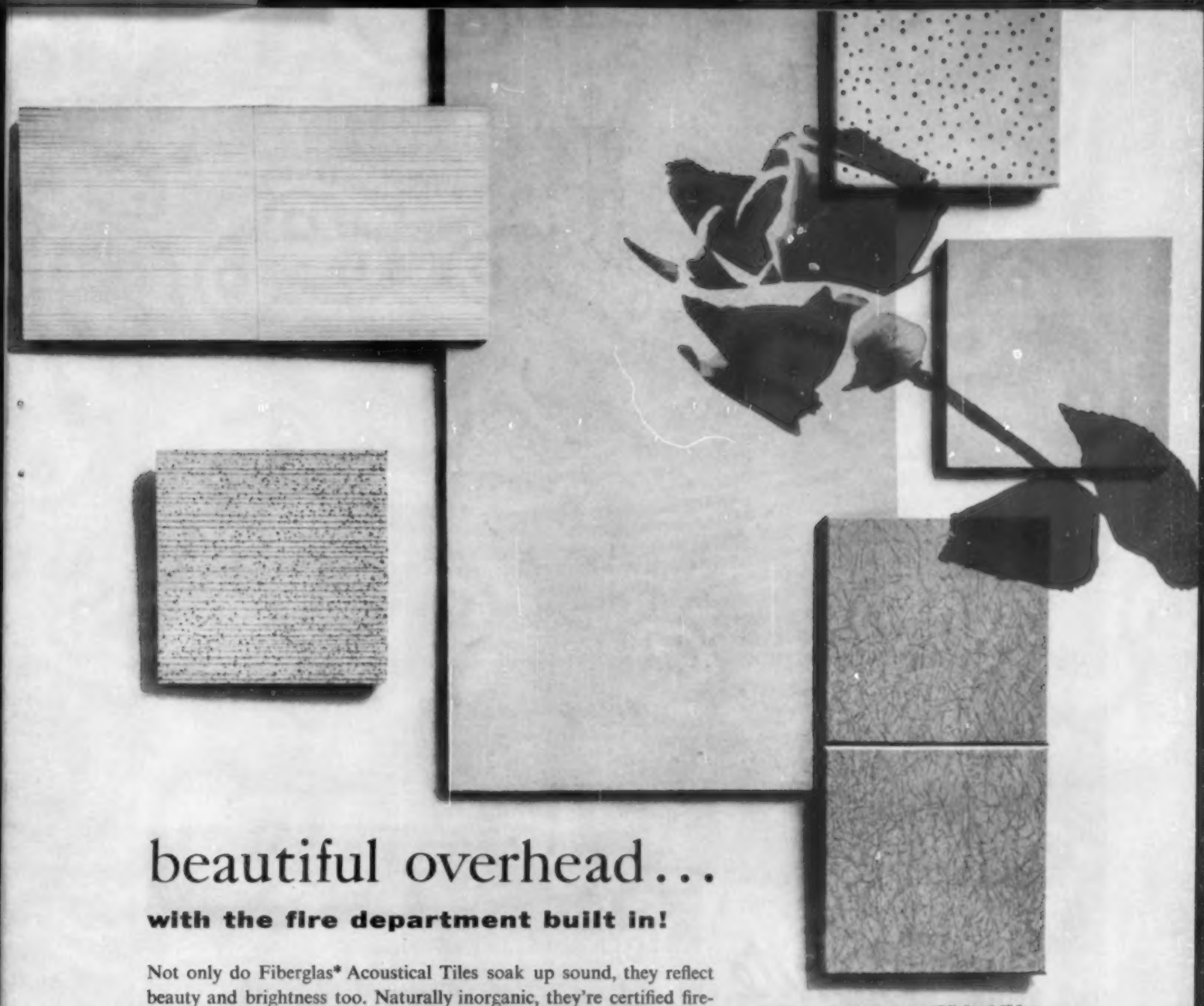
wide variety of industries. Already there is an estimate that by the time 100 have been built, they would cost under $1 million. It is not inconceivable, from this experiment and several others, that adequate and then cheap power will shortly be available throughout the country—say in 20 years, maybe less. At the same time we hear of new, diminutive, atomic war-heads used for controlled destruction purposes. We can easily imagine similar diminutive reactors, containing minute quantities of controllable radioactive energy used for domestic purposes.

Add automation to the domestic use of nuclear power—in fact the development of such power is pure Martian automation right now—and by the opening of the 21st Century (just 45 years from now), if we don't slip up and destroy ourselves with nuclear power before we learn to control our hatreds and frailties, this same power should make the world not only safe for democracy but also a fine place in which democracy may flourish.

But with new atom planes, new automobiles, the new atom city, all within reach in your lifetime if not mine, the architect and the planner had better ready himself for action on a wide front. It is clear that what will be created by all this is one very evident condition—the condition of flexibility. Let us, for the moment, separate the medical, research, testing, and mechanical devices; product creation, and all the advances already presaged by the use of radioactive isotopes. It is clear that limitless but controllable sources of energy in the infinite forms of heat, light, pressure, sound, or radioactivity available through nuclear fission, make our neotechnic society today appear no further advanced than the handicraft era up to 150 years ago.

Now perhaps you are beginning to get a glimmer of what I meant when I said that your education was already out of date. And maybe you are wondering why I recommend attending an AIA convention right after this graduation exercise, when we all know the program was behind the times before it was printed. Unfortunately, the human mind is slower

(Continued on page 194)



beautiful overhead...

with the fire department built in!

Not only do Fiberglas* Acoustical Tiles soak up sound, they reflect beauty and brightness too. Naturally inorganic, they're certified fire-safe, they won't shrink or swell, they keep their good looks through long, carefree years of service.

But here's the clincher . . . Fiberglas Ceilings are the lowest cost fire-safe acoustical ceilings you can specify. What more could you ask for? If it's more information, just write: Owens-Corning Fiberglas Corporation, Dept. 68-D, Toledo 1, Ohio.

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OWENS-CORNING
FIBERGLAS

SOUND CONTROL PRODUCTS

- Textured, Perforated, Sonofaced*, Stria* Acoustical Tile
- Textured, Sonofaced Ceiling Board • Noise-Stop* Baffles

Throughout one of the World's newest and most luxurious hotels

The Fontainebleau MIAMI BEACH, FLORIDA

ARCHITECT: Morris Lapidus, Miami Beach, Fla.
General Contractor: Taylor Construction Co., Miami, Fla.
Mechanical Engineers: Sasnett and Bennett, Miami, Fla.
Mechanical Contractors: Markowitz Bros., Inc., Miami, Fla.

SOLID Olsonite SEATS

Olsonite model No. 56 Solid color seats were installed throughout the Fontainebleau Hotel.

For every deluxe and standard bathroom throughout Miami Beach's new Fontainebleau Hotel—one of the world's most fabulous—Solid Olsonite Seats were specified and installed.

Olsonite No. 56 open front seats with cover were specified in a variety of plain colors to match the pottery of the colorfully appointed bathrooms. Like all Olsonite seats, these plain color models are solid one-piece construction. There's no sheet covering or applied finish of any kind to crack, chip or peel.

Selection of Olsonite for the Fontainebleau is another indication of Olsonite's ever increasing popularity. Equally popular for hotels are Olsonite *white seats* both with and without cover. Unlike ordinary white seats, they will not fade or discolor even after years of use.

For a complete catalog of all Olsonite models, please write on your letterhead.

Olsonite models 5 and 10 (both with and without concealed check hinge) are also ideal for hotel installations.

A-3-55

SWEDISH CRUCIBLE STEEL CO. *(Plastics Division)* **8561 Butler Avenue, Detroit 11, Michigan**

Captivate commercial clients*

WHY not join the many architects who have taken the Craftwall way to satisfy commercial and institutional clients? You'll agree that here is a wide and stimulating design opportunity — ready for the spark of your imagination.

Choose from *nine* handsome woods — Walnut, Birch, Oak, Knotty Pine, Cherry, Mahogany, Blonde Limba, Maple and Elm. *Create* with your choice of four distinctive styles. *Economize* with large, lightweight panels that hold down installation costs. Factory craft-finish ends on-the-job mess . . . packs a bonus of many more years of beauty — remarkable durability and easy maintenance.

Ask your Roddiscraft representative for samples . . . or send in the coupon below.

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John G. Flad & Associates specified Craftwall prefinished hardwood plywood paneling in their design for a businessmen's club at Madison, Wisconsin. Their choice: Walnut . . . Style 100. Result: Handsome, client-pleasing interiors.

* plan for beauty with

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Please send me illustrated literature and cost information. I want all the facts about Craftwall factory-finished paneling.

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2052 Edgar Street, Evansville 7, Indiana

Send me without obligation my personal copy of "International Doors for Industry and Aviation":

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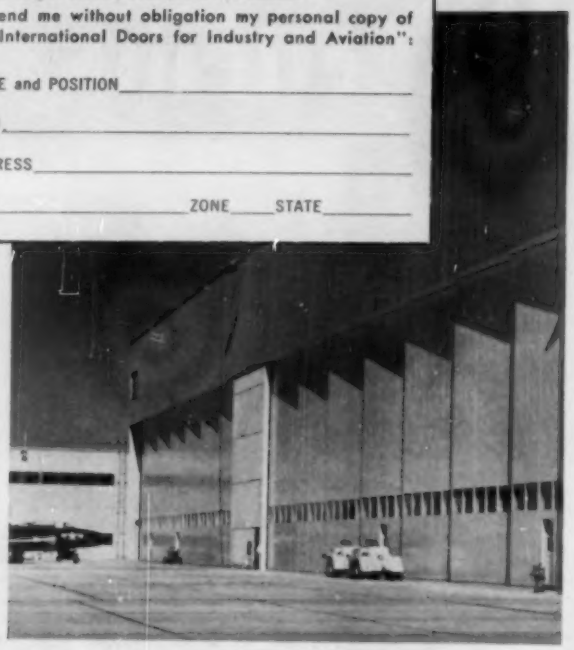
CITY_____ ZONE____ STATE_____

THIS COUPON BRINGS YOU BASIC DATA ON NEWEST MAJOR DOOR ADVANCES

another major name in America's air power



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INTERNATIONAL HANGAR DOORS

Grumman

INTERNATIONAL-BUILT motor and manually operated hangar doors at

GRUMMAN AIRCRAFT ENGINEERING CORP.
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OFFICE OF ALFRED EASTON POOR, and SEELYE, STEVENSON, VALUE & KNECHT,
New York: Architects and Engineers for Project

GUY B. PANERO,
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Architectural specification of these International Doors was based on two prime points: (1) Specialized experience in the design and fabrication of doors to meet unusual entrance needs. (2) Demonstrated ability to meet such requirements on schedule — and economically.

Almost 500 tons of steel went into this International installation at Grumman's Peconic River Plant and Facilities. Almost 100 door leaves, providing a total opening area of 60,000 square feet, afford weathertight protection when closed. And all are engineered to insure ready operation regardless of climatic conditions.

When considering doors for any industrial or aviation application, investigate International's facilities and abilities . . . both proved the surest way, by the preference of America's major industries.

See Sweet's Architectural or Industrial Construction File for complete catalogs.

INTERNATIONAL SERVICE

2052 EDGAR ST. • EVANSVILLE 7, IND.

INTERNATIONAL STEEL COMPANY

out of school

(Continued from page 190)

than a nuclear reactor although, fortunately, it is no push button machine. Many times in this column I have given my favorite quote from Launcelot Hogben, the eminent British mathematician and scientist, and here it goes again: "The training of the scientist and technician gives him no prevision of the social consequence of his activities." Perhaps this is less true today than it was before Hiroshima and Nagasaki. But it is still the case as we plunge ahead into this 21st Century world of limitless energy and of limitless physical flexibility.

The AIA Convention will be an excellent lesson for you. It will demonstrate quite clearly how limited we still are in our abilities to correct our physical and social difficulties. Our arts and sciences of planning and building are so primitive that I quail before the prospect of limitless energy and free flight.

Gentleman city builder, graduating today, you had better hurry. These pure scientists are itching to set off that last bomb which chain reaction will prove that it can be done in less than one hour. The operation will have been successful with even the doctors all dead.

notices

summer program

PLASTICS IN THE DESIGN OF BUILDING PRODUCTS will be the subject of a Special Summer Program, MASSACHUSETTS INSTITUTE OF TECHNOLOGY, June 14-24. PROF. BURNHAM KELLY will head the Program, assisted by members of MIT staff and distinguished visiting experts in the plastics engineering and design fields.

exhibitions

FOURTH ANNUAL BOSTON ARTS FESTIVAL, featuring New England painting, sculpture, graphic arts, and architecture, will take place in the Boston Public Garden, June 5-19.

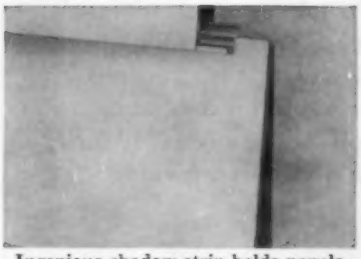
appointment

ROBERT IGLEHART has been appointed professor of art and chairman of the Department of Art, UNIVERSITY OF MICHIGAN College of Architecture and Design.

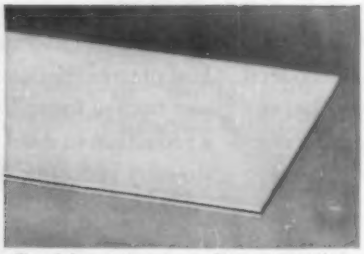
You've Never Seen Siding Like This!

Masonite Offers Revolutionary New

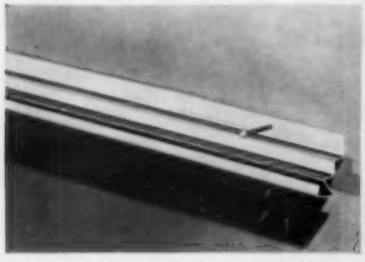
SHADOWVENT SIDING



Ingenious shadow strip holds panels in place permanently, creates eye-pleasing shadows.



Precision-cut groove fits onto strip, forming weather-lock joint. Cuts application time.



Vents on bottom edge of strip lets walls "breathe." Paint stays new-looking longer.

No visible nails. No puttying, "bleed-through" or working out of nails. Timesaver!

- **Permanently attractive—nails don't show!**
- **No dips or waves—every course true!**
- **Vented to minimize moisture problems!**

Now — the most nearly perfect siding ever made!

Masonite Shadowvent Siding incorporates the rugged strength, stability and weather resistance of Tempered Presdwood®, along with the advantages of an exciting new application system.

Specially designed aluminum strips create character-building shadows. Nailing on strips only...no wall disfigurations. Strip holds course above it in perfect alignment.

Builders report up to 33% saving in application labor with Shadowvent Siding. Send now for all the facts at no obligation.

Specify This Man He Makes The Difference

MASONITE SHADOWVENT SIDING

TEMPERED PRESDWOOD PANELS FROM MASONITE® CORPORATION

(Not immediately available west of the Rockies)

MASONITE CORPORATION
Dept. PA-6, Box 777, Chicago 90, Ill.

Please tell me more about Shadowvent Siding.

Name.....

Firm.....

Address.....

Town.....Zone.....

County.....State.....

LATH and plaster

Saves Nearly $60,000 and 30 days on New Wanamaker Store

• Mr. A. O. Leighton, Partner of Irwin and Leighton, General Contractors, says: "In the new Wanamaker store in Wynnewood, Pa., a lath and plaster ceiling, serving as membrane fireproofing for the floor beams, eliminated the need for individual encasement of structural members with heavy concrete.

"This construction substantially reduced the dead load weight of the building, thereby cutting framing costs, and reducing the construction time by 30 days. An over-all saving of approximately $60,000.00 was effected!"

The technique of using lath and plaster ceilings to fire protect structural floor beams and "shell" or perimeter fireproofing to protect columns, has advanced sharply in recent years. Fire resistive ratings up to 4 hours for beams and columns are provided with lath and plaster that weighs as little as 12 pounds per square foot. These constructions permit a reduction in dead weight of as much as 50%, thereby reducing the cost of steel framing.

Certified Craftsmanship *IN ACTION...*

• The Certified Craftsmanship Certificate is a written pledge of adherence to work schedules, job cooperation, work of craftsmanship caliber and nationally recognized standards of quality. A certificate is yours for the asking from lathing and plastering contractors adhering to the Code of Standard Practices for Lathing and Plastering.

We suggest a thorough reading of the Code of Standard Practices which appears on the back of every certificate. Ask your lathing and plastering contractor for a copy, or write National Bureau for Lathing and Plastering, 1401 K Street, N.W., Washington 5, D. C.

This is the emblem of the National Bureau for Lathing and Plastering. It symbolizes high standards of job performance and responsibility.

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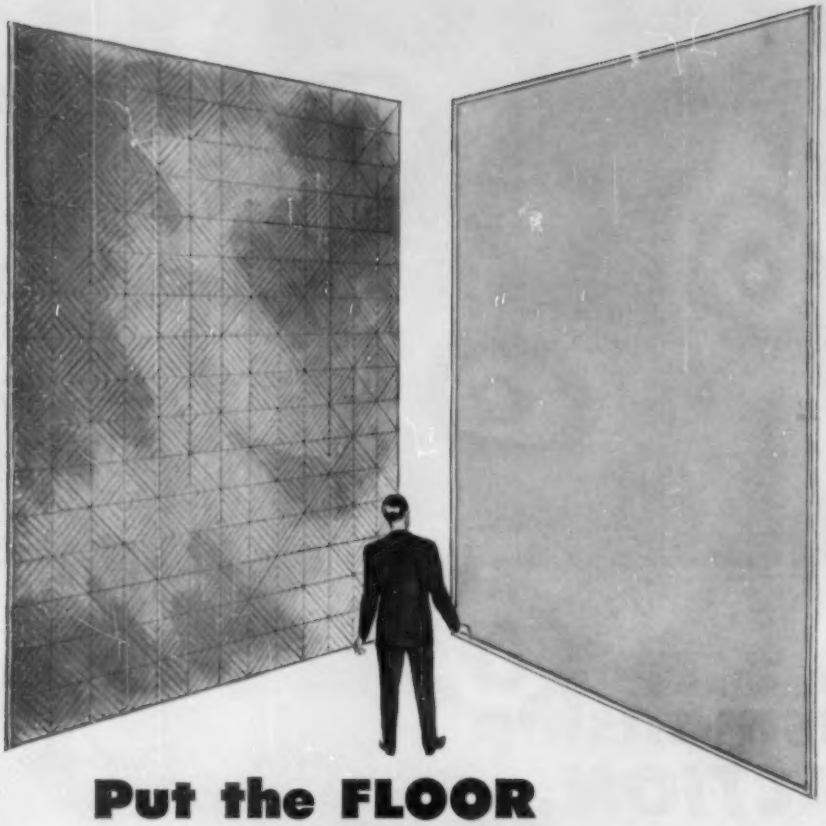

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From a parqueted floor to wall-to-wall carpeting, the floor is today an important part of interior design. Chances are, the ceiling is totally uninteresting.

In times past, the ceiling was one of the major decorative elements. Then, with old-type materials and modern building costs, the decorative ceiling became too expensive for the average home.

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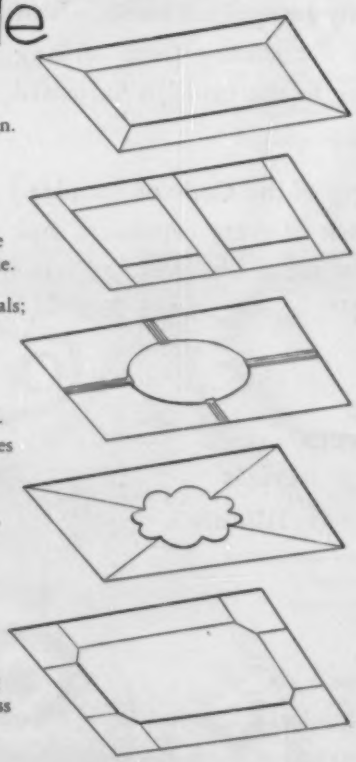

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p/a reviews

partial integration

The Pelican History of Art. *Edited by Nikolaus Pevsner. Volume Z5*—**Painting in Britain in the Middle Ages,** *by Margaret Rickert. 253 pp., 192 plates. Volume Z6*—**The Art and Architecture of Russia,** *by George Heard Hamilton. 320 pp., 180 plates. Volume Z7*—**The Art and Architecture of the Ancient Orient,** *by Henri Frankfort. 279 pp., 192 plates. Penguin Books, Inc., 3300 Clipper Mill Rd., Baltimore, Md., 1954. $8.50 per volume*

The decision of this magazine to review *THE PELICAN HISTORY OF ART* was made in the hope that an integrated presentation of architecture and art throughout history would prove of value to the practicing architect. The seven volumes now published show that whenever the integration idea has been carried through, much can be gained, while pure art history tends to become too idiomatic for even the most culture-minded building practitioner.

The editor of the *PELICAN* series has, one might say, a Kiplingesque reverence for British painting. Yet Waterhouse, in the first volume, *Painting in Britain 1530-1790* (page 164, February 1954 P/A) and Margaret Rickert, in the subsequent *Painting in Britain in the Middle Ages,* admit the curious lack of native English genius on every page. Miss Rickert deals mainly with medieval manuscript illuminations, since very few murals or panel paintings survived, and stained glass, beautiful as it is, lags behind the French prototypes by almost 200 years. These illuminations, mainly of the Gospel, range from the famous books of Lindisfarne and Kells, in the Seventh Century, to the Late Gothic Bury-St. Edmunds manuscripts. In the eight centuries covered, Celtic and Continental influences sweep across the pages like invading armies: Irish above all, Carolingian, Byzantine, Flemish, Italian, French. The pictures themselves, handicapped by lack of color, fall short of the animistic vitality of, say, the Catalan school, or the intense mysticism of German and Gothic

(Continued on page 204)

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Macomber has JOB ENGINEERED four distinct Steel Joist types.

Each type serves some specific structural purpose to your advantage from a cost standpoint.

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STRUCTURALS

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We invite you to shop for color fixtures—compare materials, design and workmanship—compare bathing features, utility features, finishes and beauty of appearance. And compare color match, color shade and color brilliance. You, too, will agree—Briggs Beautyware is the outstanding color value and a great contribution to home sales features.

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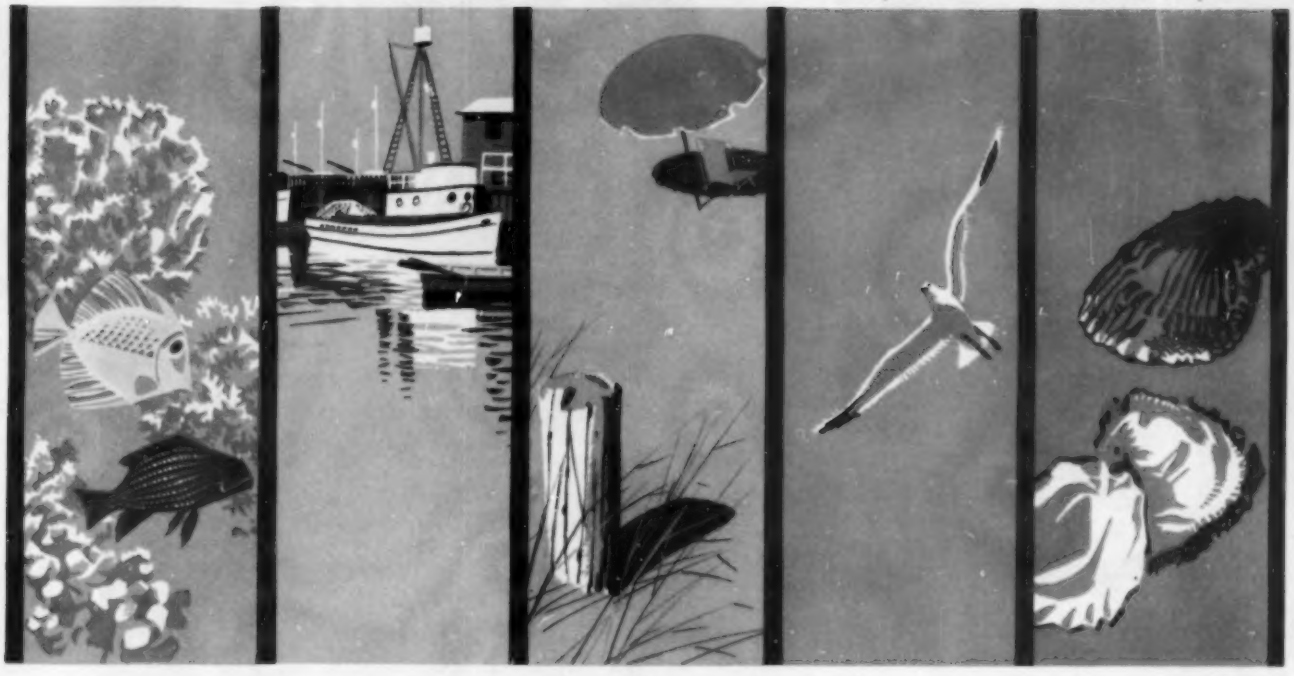

Briggs colors complement any type of home—any decorating theme

No matter what the style of a home—from Colonial to Contemporary—you can enhance the beauty of the bathroom and kitchen with any of Beautyware's sparkling sea-tone colors. Here are colors so natural and so pleasing that they complement any decorating theme—even suggest new decorating ideas—add greatly to a home's livability and saleability.

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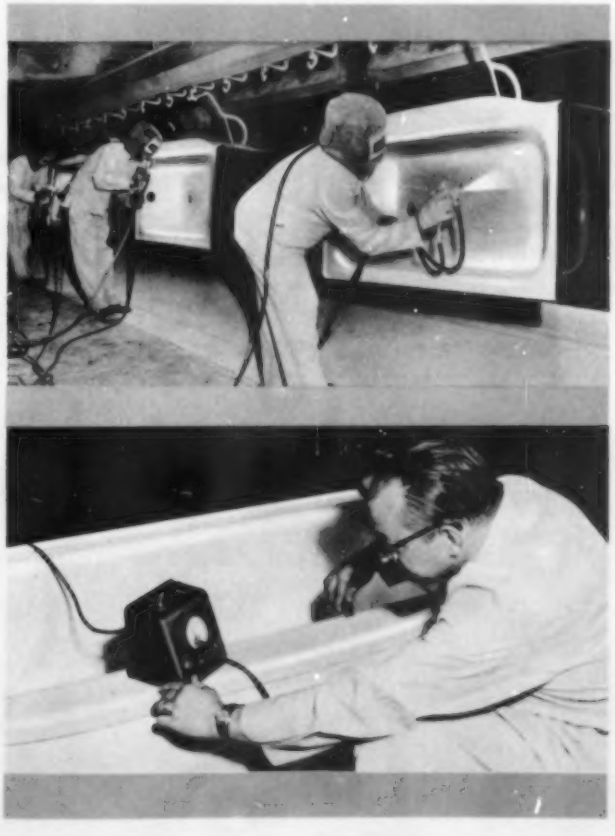
Pressure-formed enameling steel—proven superior for many rugged porcelain products—is specially processed at Briggs into glass-hard, glass-bright color fixtures.

At Briggs, too, the finest clays are chemically blended and glazed under most exacting controls to assure matching vitreous china. As a leader in color processing, Briggs has made color fixtures available at new economical costs.



Briggs Beautyware finishes are fadeproof and stainproof

Briggs color finishes are so durable that they defy stains, acids, medicines and cosmetics, *just like glass itself.* In addition, they resist chipping and marring, and are absolutely fadeproof.

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A Second Bathroom is Beautyware's new standard for American Living

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Highland Acres and Rolling Park Manor are essentially a unit development featuring single-level and split-level homes in contemporary style. When completed, the area will comprise three hundred homes ranging from $10,000 to $14,000. All homes will be equipped with AllianceWare fixtures in color. The rolling topography and winding streets will provide a park-like appearance.

Builders—Ted Bentley and Fred Wallace, Jr.
Architect—Jack Swerman
Plumbing Contractor—Madsen Plumbing and Heating Company
Plumbing Wholesaler—J. Levitt, Inc.

Developer and Plumbing Contractor "team up" with AllianceWare Fixtures in Merchandising 300 Homes

When Ted Bentley and Fred Wallace, Jr. began planning Highland Acres and Rolling Park Manor homes sites in the City of Chester, a suburb of Philadelphia, Pennsylvania, their previous experience in home development made them realize the extreme importance of fine bathrooms as a home sales-feature.

So it was a natural for them to team up with their plumbing contractor—Madsen Plumbing and Heating Company—in selecting sanitary ware fixtures that will be sales features in each of the 111 multi-level units and 146 row-type houses which are planned.

Their selection is AllianceWare — chosen for several practical reasons. Both organizations believe in AllianceWare because of past performance on previous projects of similar character. Second, the wide choice of the beautiful colors of AllianceWare makes possible the keying of decoration arrangements in pleasing variety, and third, the popular acceptance of AllianceWare in the Philadelphia area will be a distinct aid in successful selling.

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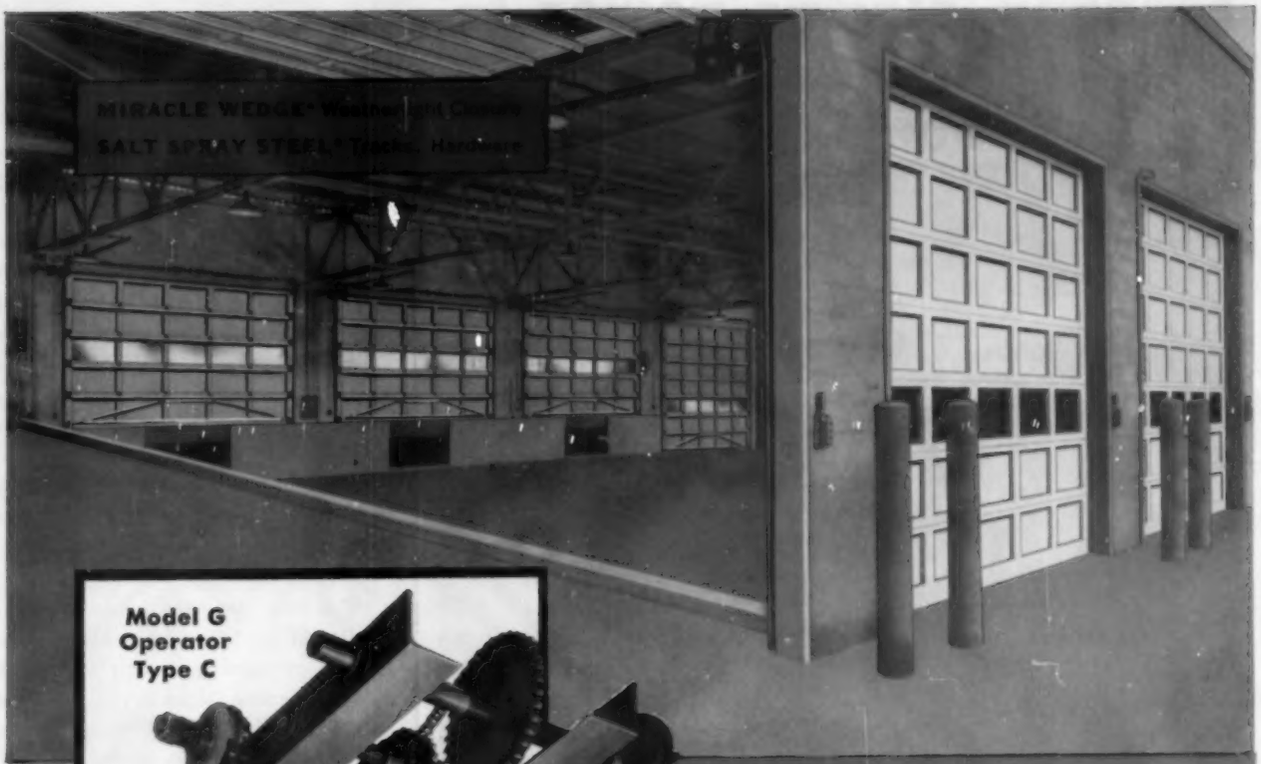

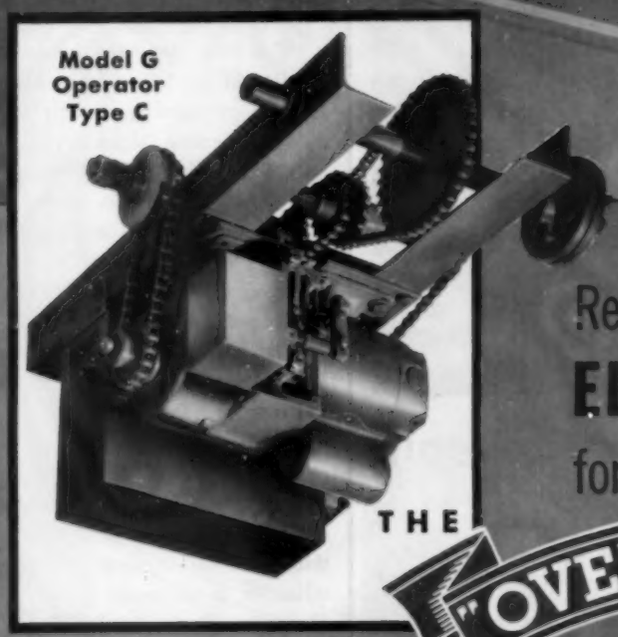

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reviews

(Continued from page 198)

Romanesque vision. But this rather parochial monotony is certainly not the fault of the author. Miss Rickert has done a fine—one might almost say journalistic—job of enlivening her material. Her tables of English History, preceding each chapter, her charts and annotations, add greatly to the understanding of the complicated cross-influences, and the brief commentary proves her to be not only an able scholar, but also a true writer. Speaking of the transition from the abstract-formalistic Celtic style to the emerging Naturalism of the Continental School she writes:

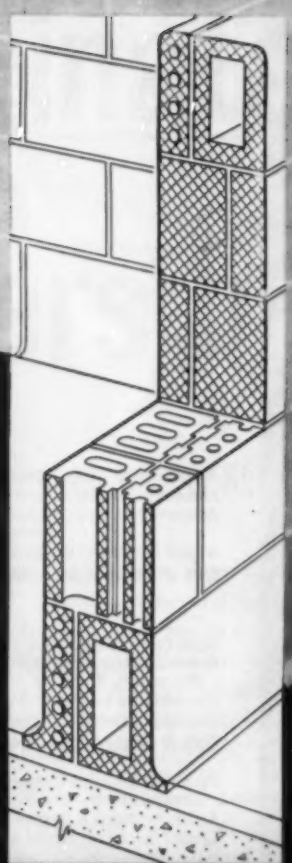
"The next step was inevitable. The scrolls put out leaves and buds, and the animals, released from their uncomfortable confinement, began to run about, not only inside the decorations but out of bounds, in the margins of the page. . . . The monsters grew in size and monstrosity, the leaves and flowers became gigantic, and the whole style suddenly blew itself out, with only a few East Anglian daisies and marigolds surviving, and an occasional grotesque showing its sad little face."

Considered in connection with the other two new *PELICAN* voulmes, Miss Rickert's book forms a bridge between the most ancient origins of our civilization, and its most recent and remote crystalization in the realm of the Princes of Muscovi. Henri Frankfort's, *"The Art and Architecture of the Ancient Orient,"* has all the characteristics of his earlier works on the Near East: scholarliness, consciseness, fine writing, and superb choice of illustrations. It underlines the great tragedy of the author's early death in 1954, terminating the work of the greatest archeologist of this century. Sumerian portrait heads of contemporary characterization, an inlaid harp from Ur antedating Abraham by more than 1000 years, the almost decadent refinement of Achemenian eclecticism, all of this is pure visual joy.

Architecturally, there is the curious sensation of seeing two vistas from opposite directions merge gradually into a stereoscopic view. From the desert comes the Semitic influence: raised platforms

(Continued on page 208)

reduce 2 building steps to 1 with...



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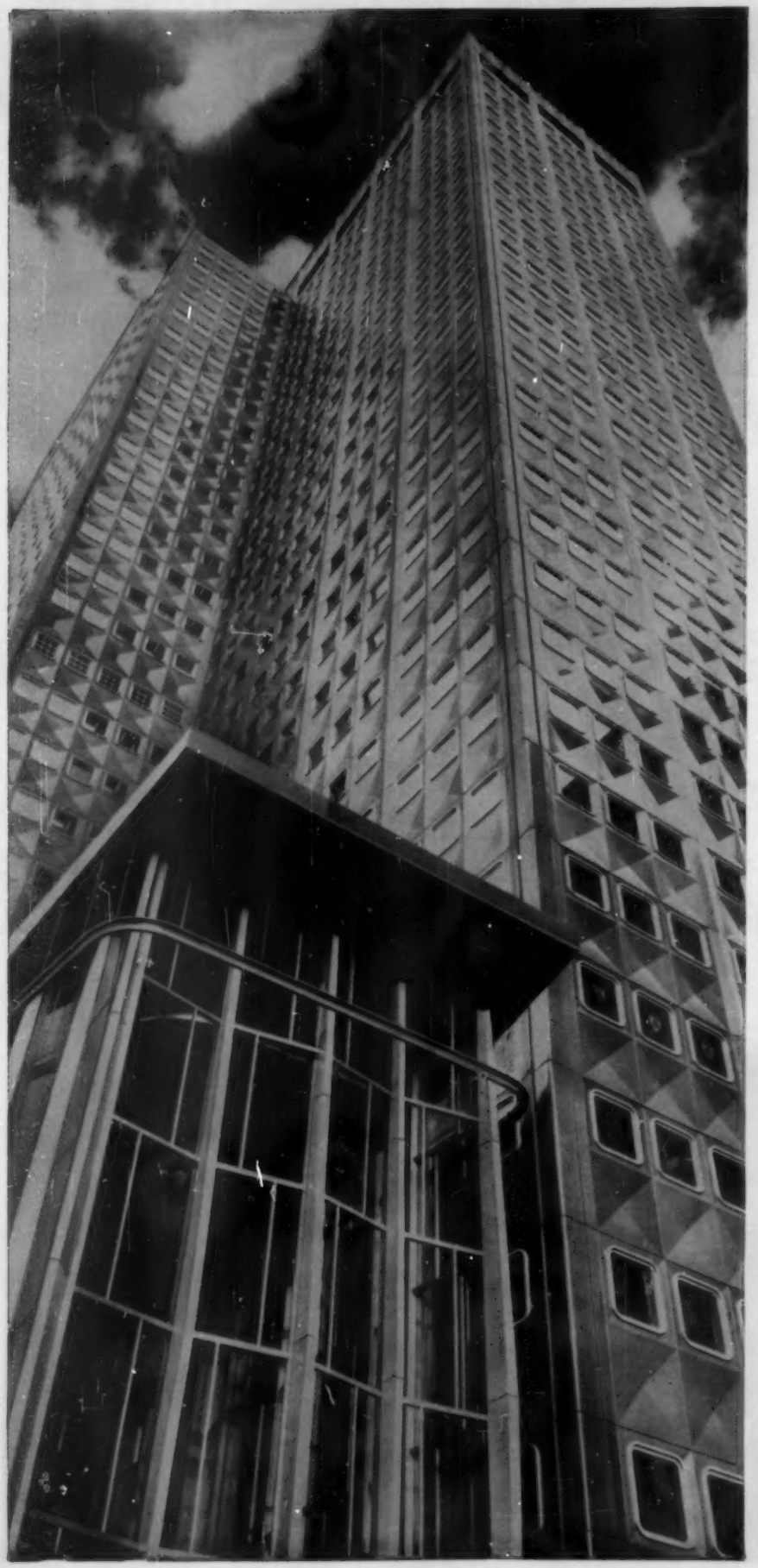

who

Alcoa Building, (left), Pittsburgh, Pennsylvania
Architects: Harrison & Abramovitz
Associate Architects: Mitchell & Ritchey
Altenhof & Bown
General Contractor: George A. Fuller Company
Date of Adlake Window order: January 25, 1951

North Central Home Office
Prudential Insurance Company of America,
Minneapolis, Minnesota
Architects and Engineers: Magney, Tusler & Setter
General Contractor: C. F. Haglin & Son's Co.
Date of Adlake Window order: October 19, 1953

Prudential Insurance Company of America,
Chicago, Illinois
Architects: Naess & Murphy
General Contractor: George A. Fuller Company
Date of Adlake Window order: November 12, 1953

Shelby County Hospital, Shelbyville, Kentucky
Architects: Nevin & Morgan
General Contractor: Otho Tapp
Date of Adlake Window order: June 24, 1952

City County Building, Detroit, Michigan
Architects: Harley, Ellington & Day
General Contractor: Bryant & Detwiler
Date of Adlake Window order: January 12, 1953

Freeport Motor Casualty Company, Freeport, Ill.
Engineers and Contractors: The Austin Company
Date of Adlake Window order: June 2, 1952

East Unit, Baptist Memorial Hospital,
Memphis, Tennessee
Architects: Office of Walk C. Jones, Jr.
Consulting Architects: Samuel Hannaford & Sons
General Contractor: Harmon Construction Company
Date of Adlake Window order: June 23, 1953

Rockford Memorial Hospital, (right), Rockford, Ill.
Architects: Hubbard & Hyland
Perkins & Will
General Contractor: Security Building Company
Date of Adlake Window order: December 26, 1951

originated aluminum reversible windows?

Anyone can claim to—but **ADLAKE** can show installations sold as early as these!

There's a lot of talk these days about companies "developing" aluminum reversible windows—and we're rather flattered. For we like to think the sudden rash of "new" windows proves that a lot of people looked at the Adlake Aluminum Reversible Windows (that we sold 'way back in January, 1951) and liked what they saw.

Take a look yourself—at the outstanding buildings listed here. They're all equipped with Adlake Aluminum Reversible Windows. (And just to keep the records all straight, we've put in the dates when the orders were placed with Adlake for the windows.)

As with all Adlake products, these windows had to undergo extensive testing before they were offered for sale, so the windows were designed and *developed* several years before the first order was placed. We believe Adlake was first with aluminum reversible windows, and until we see some installations that were sold earlier, we'll keep right on thinking so!

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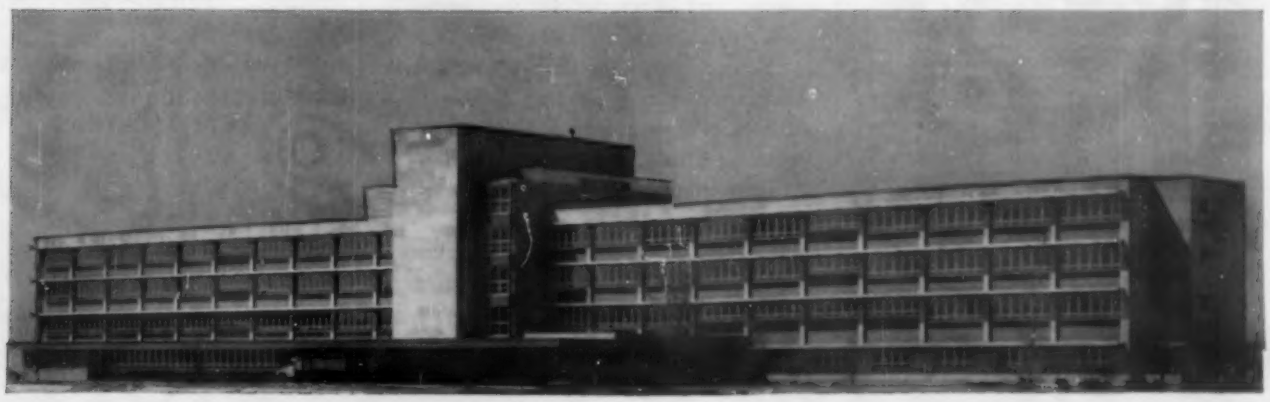

Do you recognize

this renderer's technique?

The pencil technique of a top flight renderer is as distinctively and individually his as his signature. Yet the work of so many of these fine artists has one thing in common — it is done with Mars-Lumograph imported drawing pencils and leads. Renderers find Mars the perfect pencil for every step of the job.
Whether you are rendering, detailing, or making working drawings, get the imported Mars-Lumograph or the Mars-Technico push-button lead holder and drawing leads. You'll be glad you did.

The late Albert Loecher who executed above rendering of U.S. Veterans Hospital, Wilkes-Barre, Pa.
Kelly & Gruzen, Arch's.

The 2886 Mars-Lumograph drawing pencil, 19 degrees, EXEXB to 9H—$1.50 per dozen —less in quantity. The 1001 Mars-Technico push-button lead holder — $1.50 each — less in quantity. 1904 Mars-Lumograph imported leads, 18 degrees, EXB to 9H—$1.20 per dozen—less in quantity.

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at all good engineering and drawing material suppliers

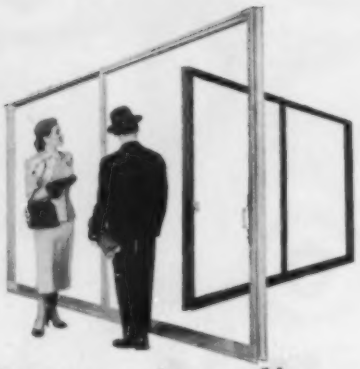
reviews

(Continued from page 204)

and square plans oriented toward the calculated points of the compass, symbols of the Semitic mind that lives for and by suprapersonal law, formulated by Hammurabi 1800 years before Western Civilization made a first attempt to supersede tribal rule with the LEX ROMANA. From the mountains and the steppes came the other force: Indo-European tribes, Sumerians, Hittites, Mitanni, Medes, who worshipped the dynamism of the sun wheel and the mysterious chaos of uncontrolled nature. Their settlements are embedded into the natural structure of the land, free-form enclosures developing centrifugally from the hall of the chieftain. The merging of the two ethnic extremes is shown in Frankfort's book on the contrast between Semitic temples, which were adopted throughout the Near East, and the fortresses, ornaments, and weapons more often determined by the dynamic Indo-European forces. After Rome had wiped out the great Bronze Age cultures, the Canaanites of Israel preserved, if not the visual evidence, at least the ideology of the great second millenium, and from it grew Judaism and the Christian Reform.

To move from this, the oldest heartland of documented human history, to the third of the three new *PELICAN* volumes, is easier than the title would suggest. George Heard Hamilton's "*Art and Architecture of Russia*" starts with the establishment of the three great centers of early medieval Russia: the Khazar realm of Kiev in the south, close to and deeply influenced by the Near East and Byzanto-Greek form elements, the Swedish-Varangian outpost at Staraya Russo in the north with its heritage of Viking culture, and Novgorod in the center, cross-terminal and trading post "between the Varangians and the Greeks," but also close enough to the Siberian Asiatics to show traces of their influence. The architecture of Russia after 1200 A.D. shows the same merging of opposites as did the Near Eastern culture, documented by Henri Frankfort. From the North comes the ancient tradition of timber building, the logged and paled enclosures following the lay of the land; "tent" towers,

(Continued on page 214)



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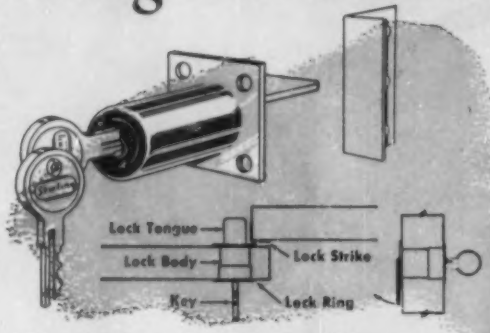

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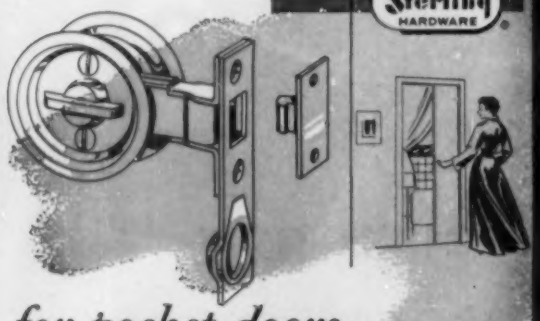

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You can make your integral moisture barriers by either using Medusa Waterproofed Gray Portland Cement or Medusa Waterproofed White Portland Cement, or by mixing Medusa Waterproofing Paste or Powder with any regular portland cement.

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And Medusa Water Repellents Never Become Porous!

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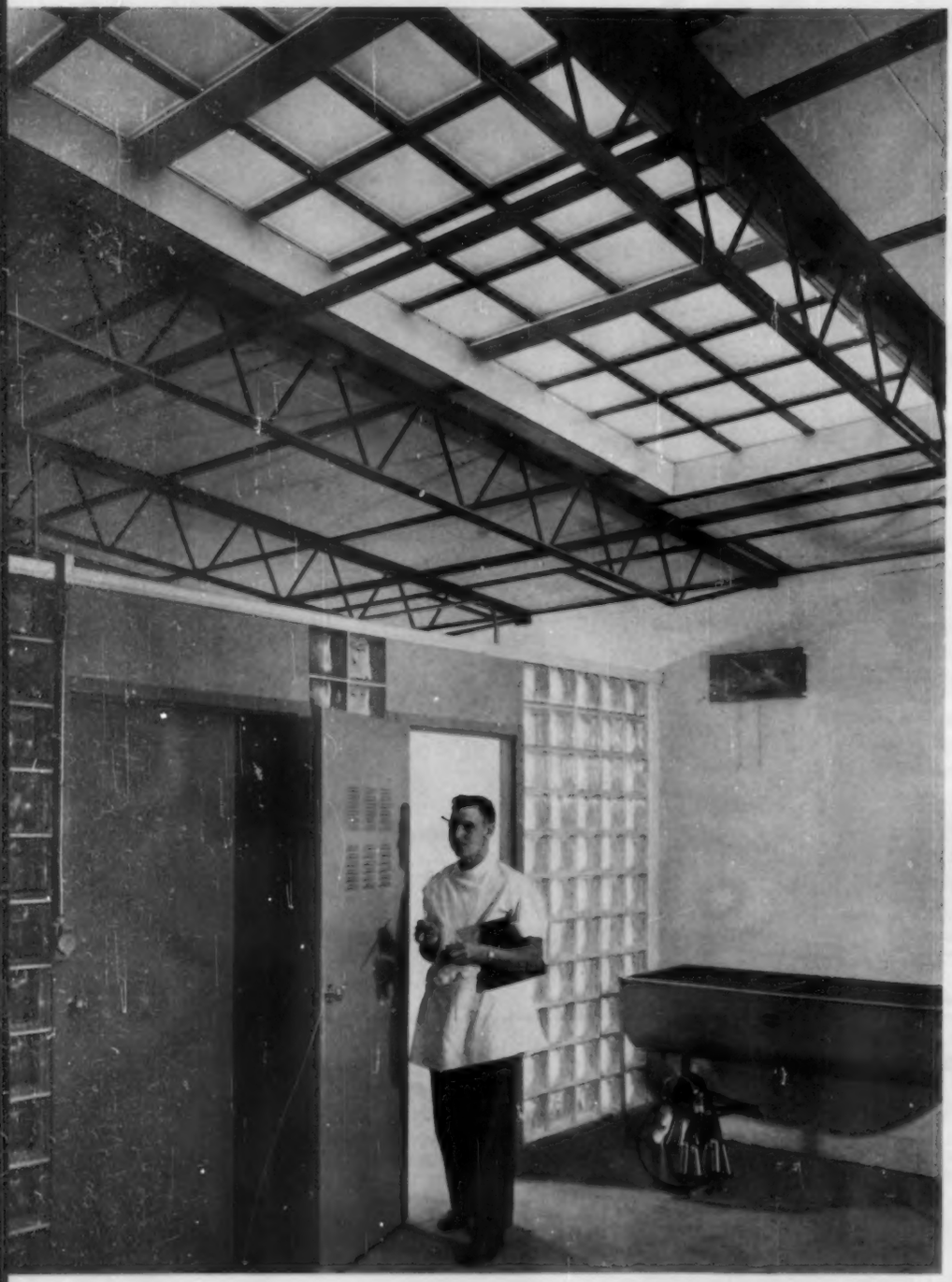
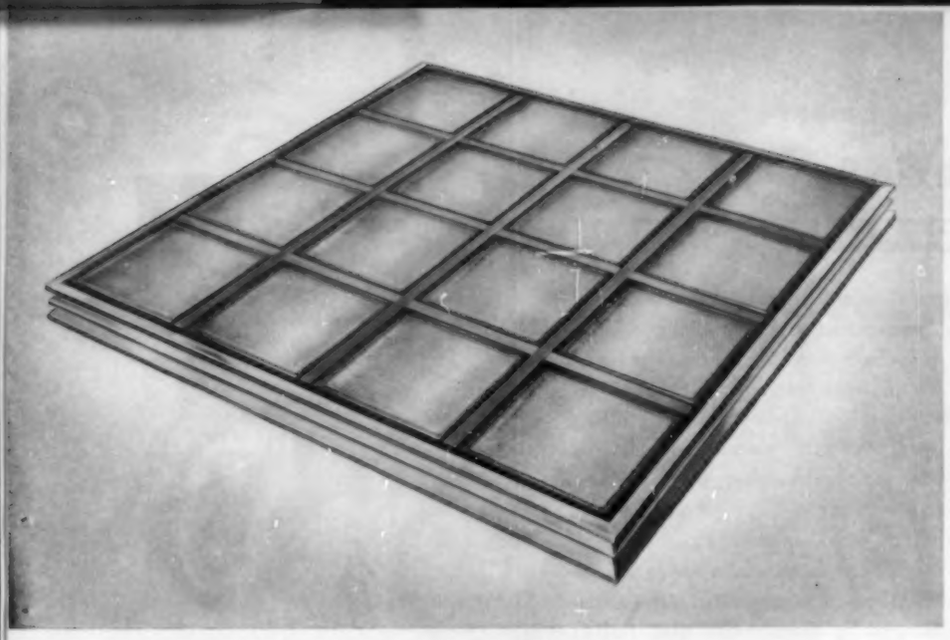


Owens-Illinois Toplite installed in the North-Central Substation of the Ohio Agricultural Experiment Station near Castalia, Ohio. Acting as a daylighting team, the Toplite Panels and glass block provide sufficient daylight during normal days without need for artificial lighting.

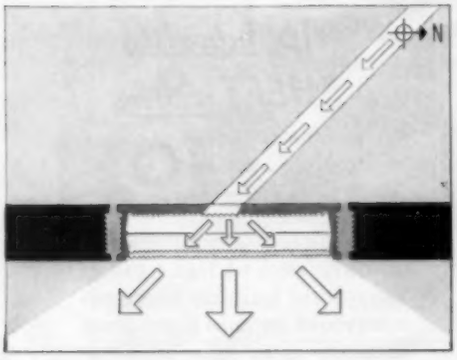
Toplite Panels may be installed in continuous strip, pattern, or in individual panels. Use a Toplite Panel as you do a lighting fixture. They permit daylighting of all building areas regardless of location or distance from exterior walls.



Toplite Roof Panels are factory-fabricated ... ready to install

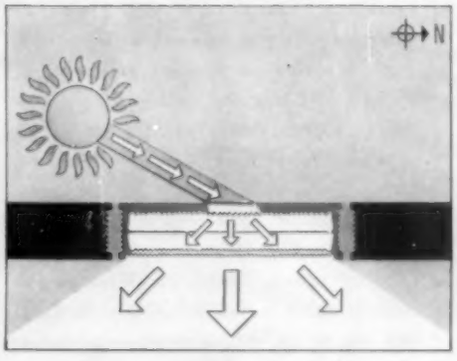
They are shipped in individual crates marked to show correct orientation and directional positioning; for speed and ease in installation. Panels arrive on job site ready to install. They are set on prepared curbs and anchored ready for flashing by the roofer.

Why Owens-Illinois TOPLITE meets the demand for good daylighting



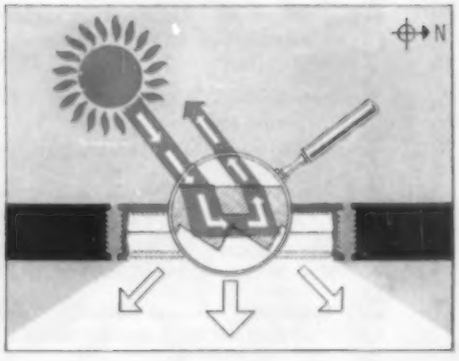
Transmits north light

Maximum transmission of north light is a desirable quality in toplighting because of its uniformity and freedom from glare and solar heat. Note how the prism structure of Toplite affords efficient transmission of north light.



Accepts winter sun

Since low winter sun is comparatively weak in relation to high summer sun as far as glare and solar heat are concerned, maximum transmission is again desirable. This illustration shows how Toplite accepts and transmits winter sunlight.



Rejects summer sun

Other materials which transmit north light and low winter sun also transmit high percentages of light during the hot, summer months. Toplite rejects direct light and heat from hot, summer sun, but transmits much of the cool, north light.

Write for free booklet on Toplite Roof Panels

The complete story of this great new advance in efficient utilization of free daylight is available in this new bulletin. For your free copy write today: Kimble Glass Company, subsidiary of Owens-Illinois, Dept. PA-6, Toledo 1, Ohio.

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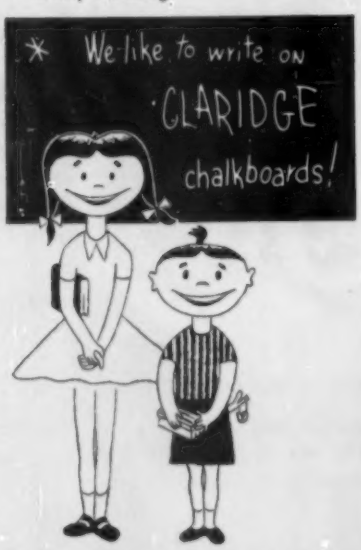

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reviews

(Continued from page 208)

perhaps Asiatic in origin but following the construction of Early Medieval mast churches in Scandinavia. From the South comes the Byzantine cupola, itself a Persian import; the Near Eastern tradition of the walled city; and the splendor of over-all decorations that seem to have come directly from Nimroud and Khorsabad. It all climaxes in the Moscow Kremlin: "The present Kremlin bears all the marks of the changing tastes of each successive age." There were also Italian Palaces, built by imported architects from Milan and Florence, the exuberant Baroque of Balthasar Neumann, Neo-Classicism adopted by Catherine the Great and her successor, and finally the dead eclecticism of 19th Century revival styles.

Hamilton's descriptions are without the ramblings of the usual expert. They read entertainingly and succeed, as is particularly important in Russian architectural history, in filling the walls with the historical figures that created them. It is therefore particularly disappointing and puzzling that his work ends with 25 pages, devoted to the most mediocre paintings of Russian 19th Century and Early 20th Century artists, based on Western art schools which in themselves were of dubious originality. Not a word or a picture given of all that happened in Russian architecture after the Revolution of 1917. A strange and inexplicable omission—or self-imposed political censorship!

SIBYL MOHOLY-NAGY

architects' statements

Une Petite Maison. *Le Corbusier George Wittenborn, Inc., 38 E. 57 St., New York 22, N. Y. 96 pp., illus., $2.50. In French with English translation.*

Scope of Total Architecture. *Walter Gropius. Harper & Brothers, 49 E. 33 St., New York 16, N. Y., 1955. 185 pp., illus., $3.50*

These two little books are by-products of the activity of great architects. They add, but not greatly, to our image of them. Le Corbusier's book is intensely personal, all intimacy and charm—visual and sentimental notes on a little house he built

(Continued on page 216)

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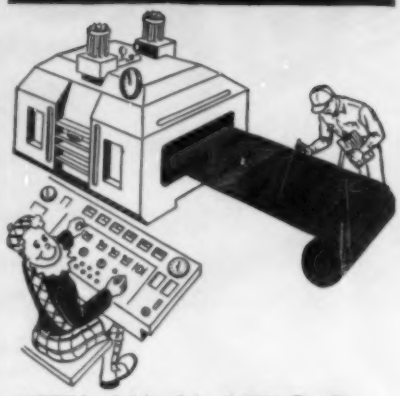

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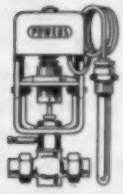

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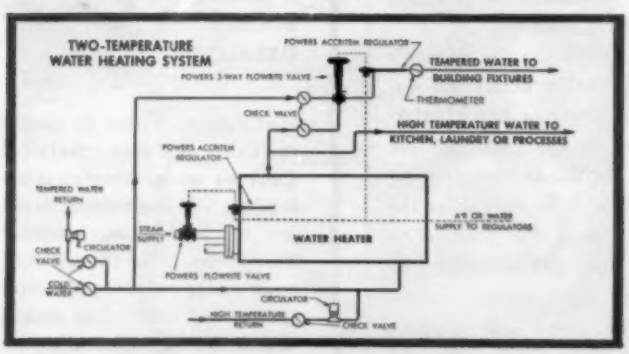

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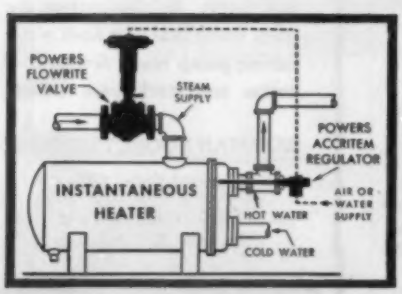

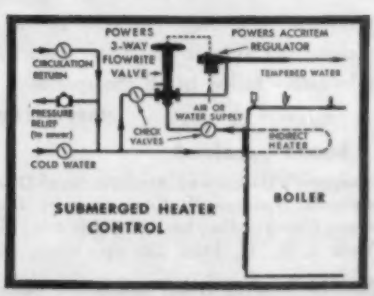

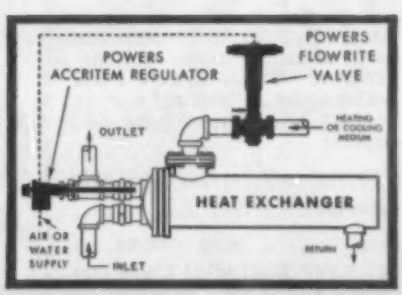

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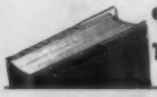

BUILDING TYPE STANDARDS

By
HAROLD R. SLEEPER,
F.A.I.A.

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reviews

(Continued from page 214)

in 1923 for his aging parents, on the soothing shores of Lake Geneva. Here is the antidote to the stereotype of Le Corbusier, Great Geometer. He glories now in the casual, the accidental, and he makes the most of growing things, of weathering, of settling, and even the dog, as they affect this modest shelter. The photographs, like the atmosphere, are soft and hazy, and one thinks of another Swiss-Frenchman, Jean Jacques Rousseau, who 200 years ago frequented this same lake and formulated the idea of the "little house on the hill," the rustic ideal to which even our Levittowns pay unconscious obeisance.

Dr. Gropius' book looks outward, rather than inward. It is directed to the public at large, rather than the profession, and is an architect's contribution to a series entitled *World Perspectives*, which seeks to "interpret creative forces at work today" in the world community. Gropius, one of the most universal and effective minds of our century, would seem a logical choice. His book touches on design education, the role of the architect and his team mates, basic assumptions of housing and planning, and the need for imaginative artistic-sociological-technical research for the creation of a new and better way of life yet unknown.

If he succeeds in opening the layman's eyes and keeping totality before the student's, then more power to him. Unfortunately, the task is too great for the space available; the illustrations are inadequate; the prose is as lyrical as the average textbook; and, due perhaps to stringent editing, the work never hits its stride. The many short sections derive from previously published articles going as far back as the 1920s. Their historical value and prophetic sureness are undeniable; but this is one time when prefabrication failed to hit the spot.

MARTIN JAMES

books received

Simpson's History of Architectural Development. Volume II. Cecil Stewart. Longmans, Green & Co., Inc., 55 Fifth Ave., New York 3, N. Y., 1954. 288 pp., illus., $5.75

Motels. Geoffrey Baker and Bruno Funaro. Reinhold Publishing Corp., 430 Park Ave., New York 22, N. Y., 1955. 272 pp., illus., $12

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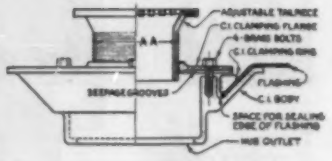

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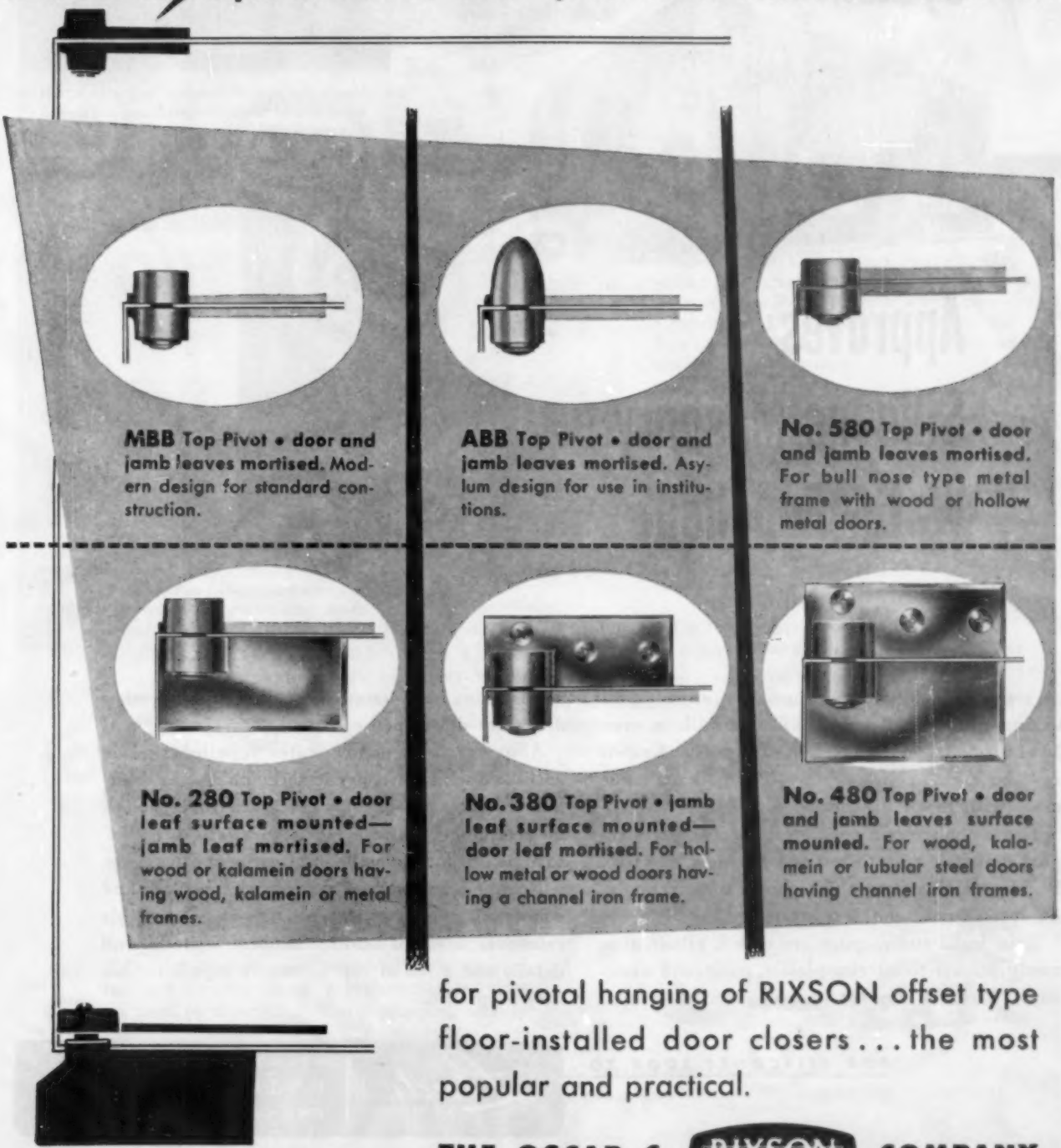

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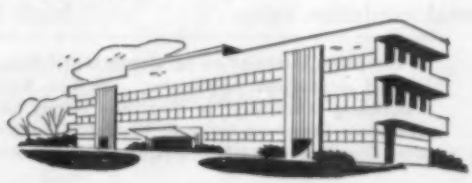

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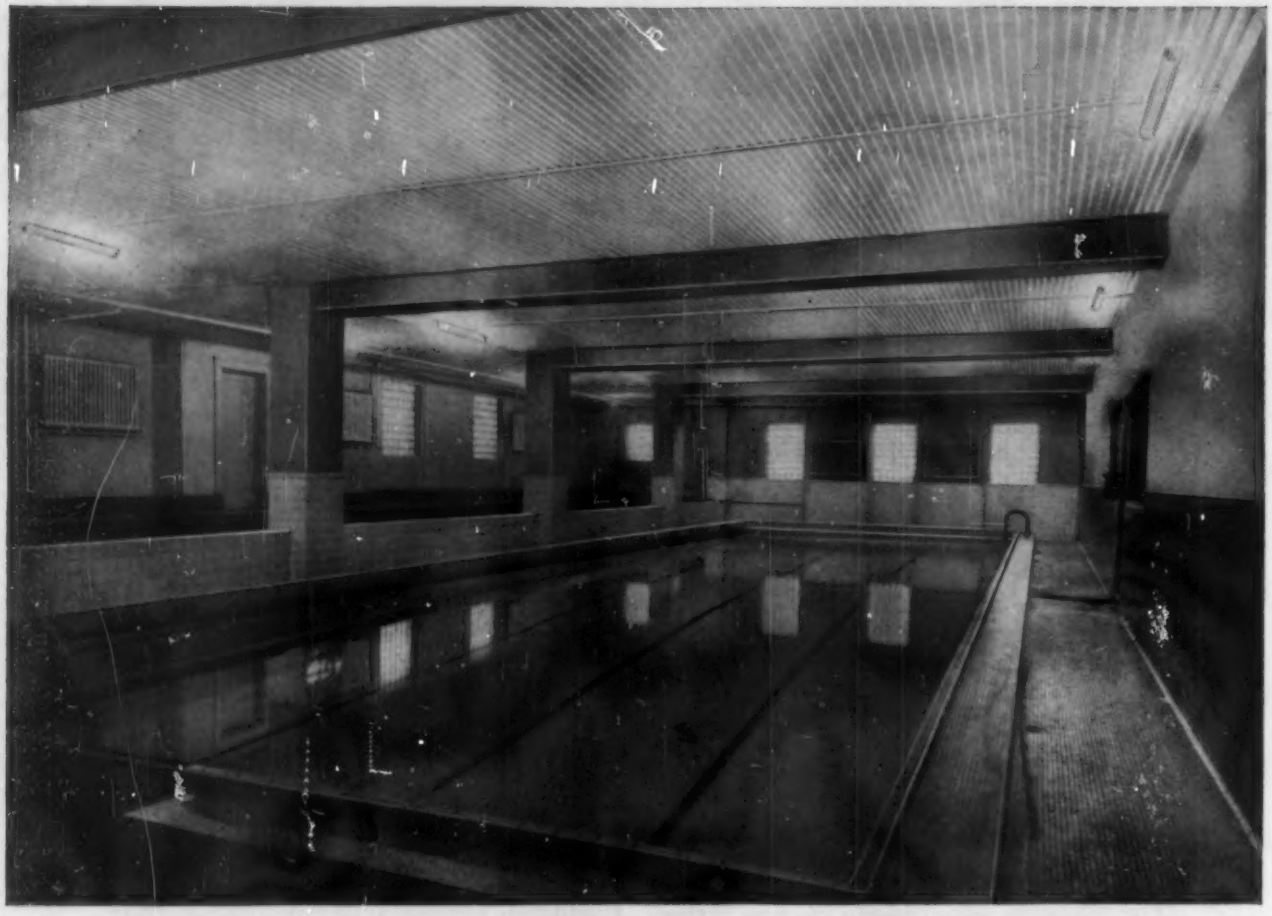

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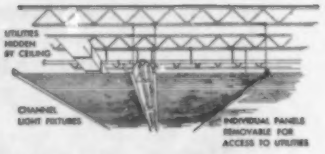

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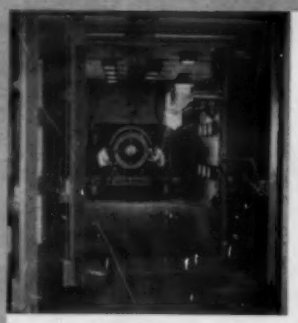

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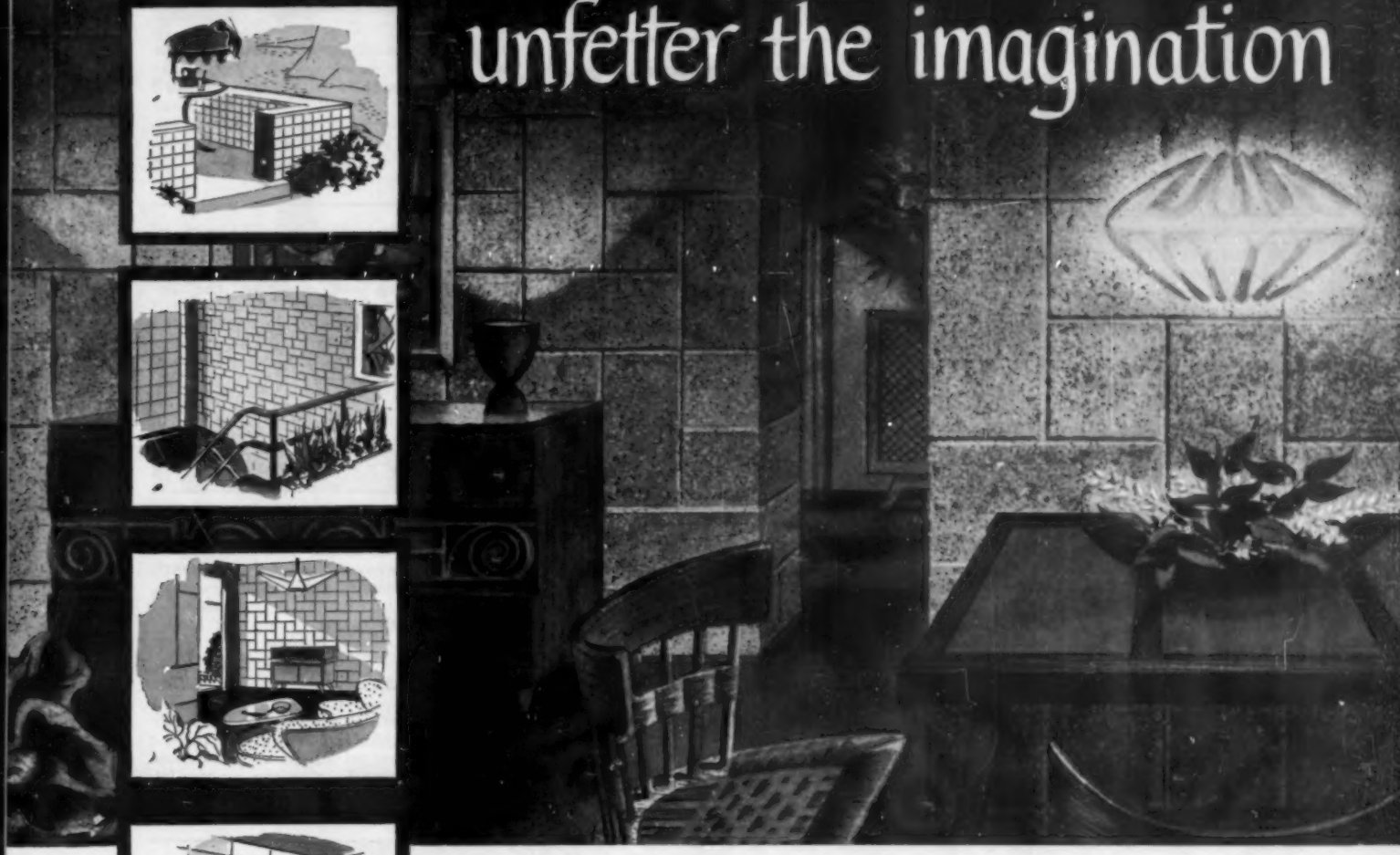

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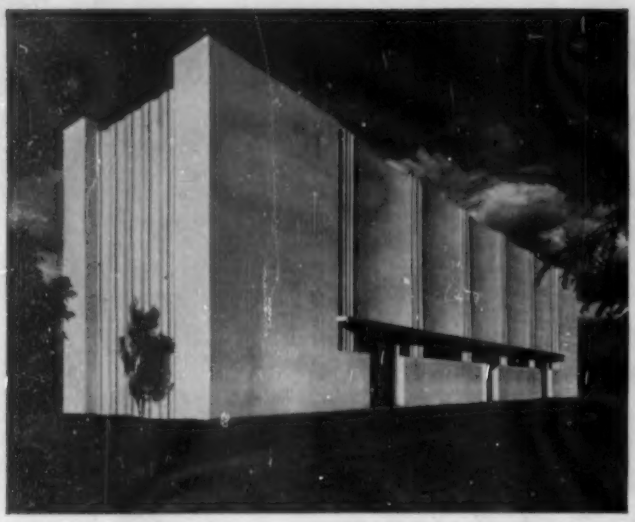

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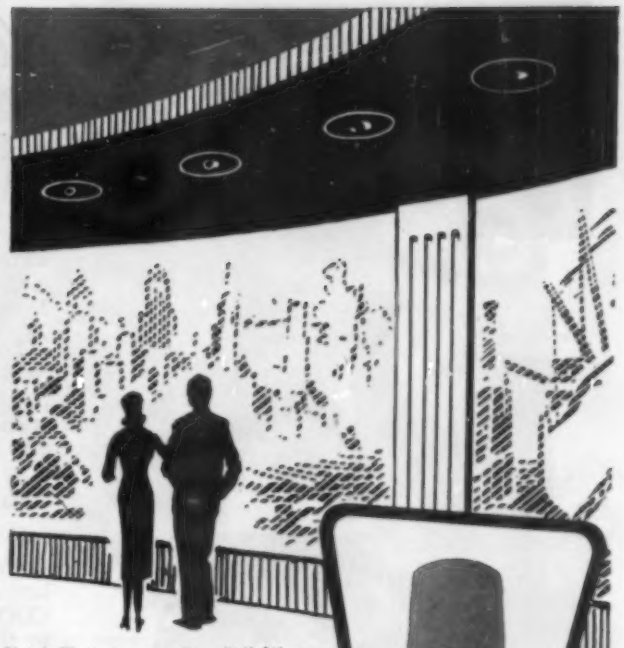

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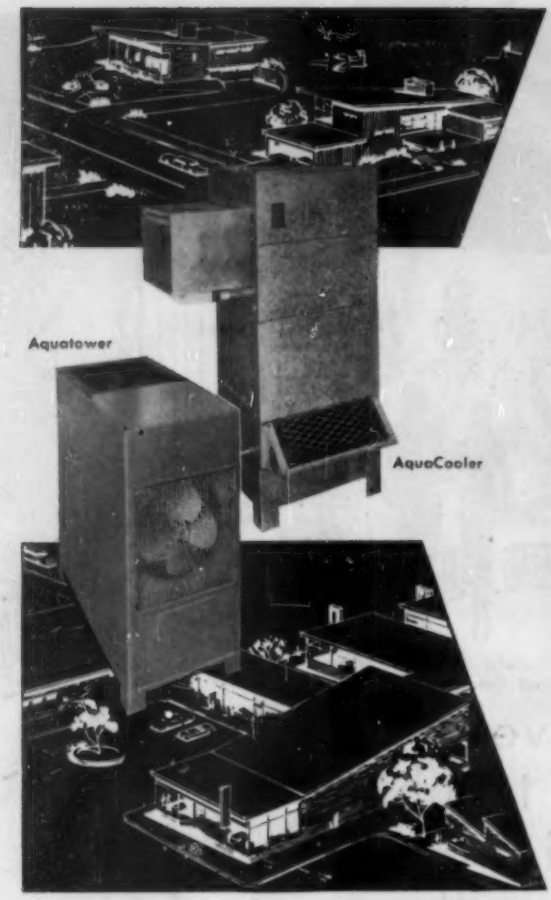

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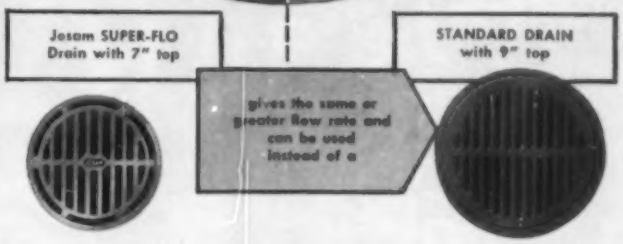

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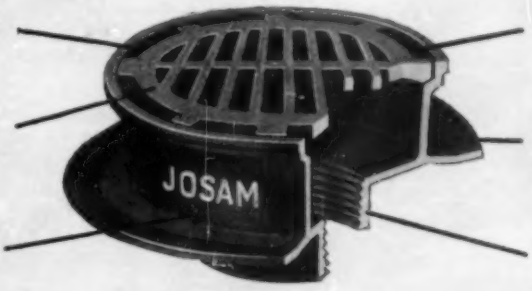

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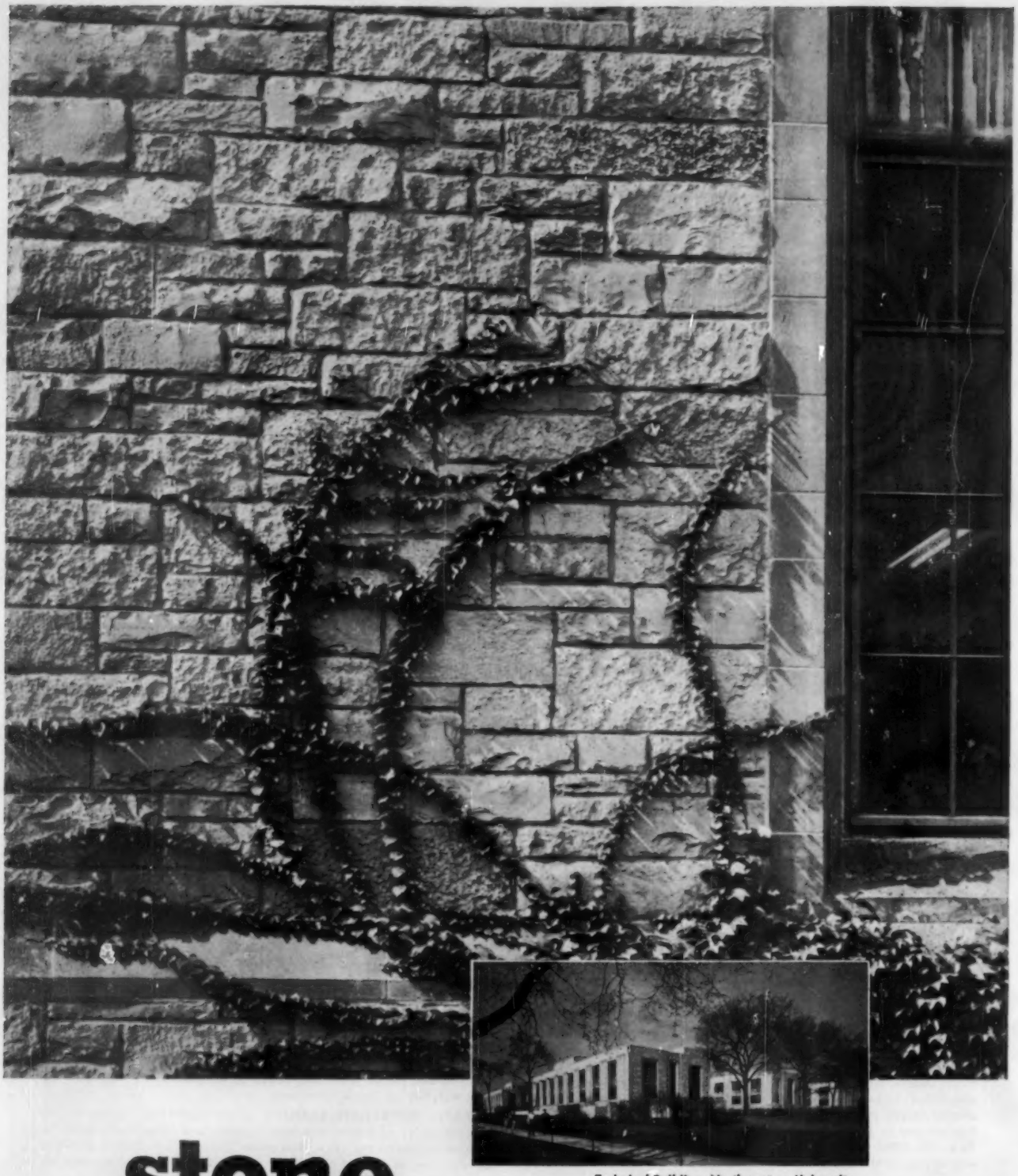

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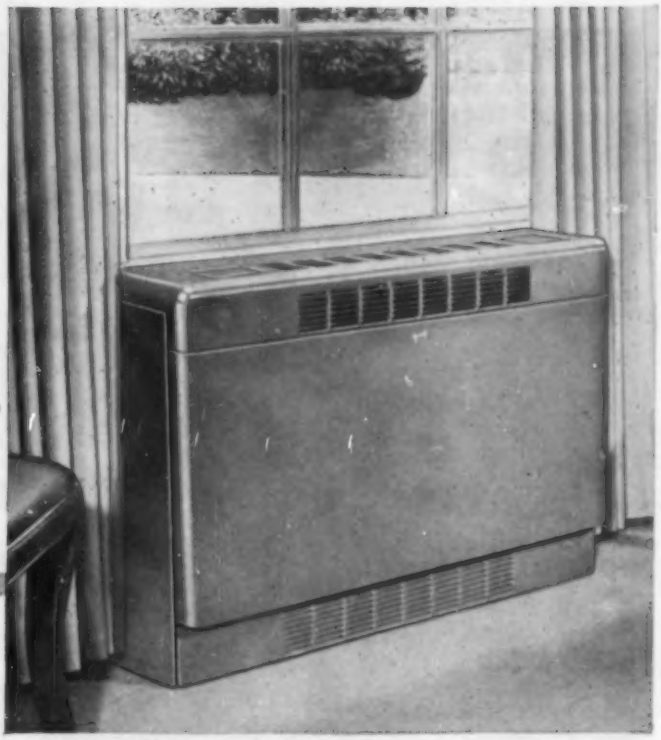

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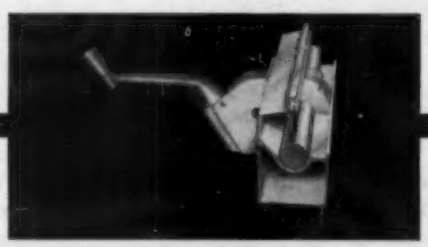

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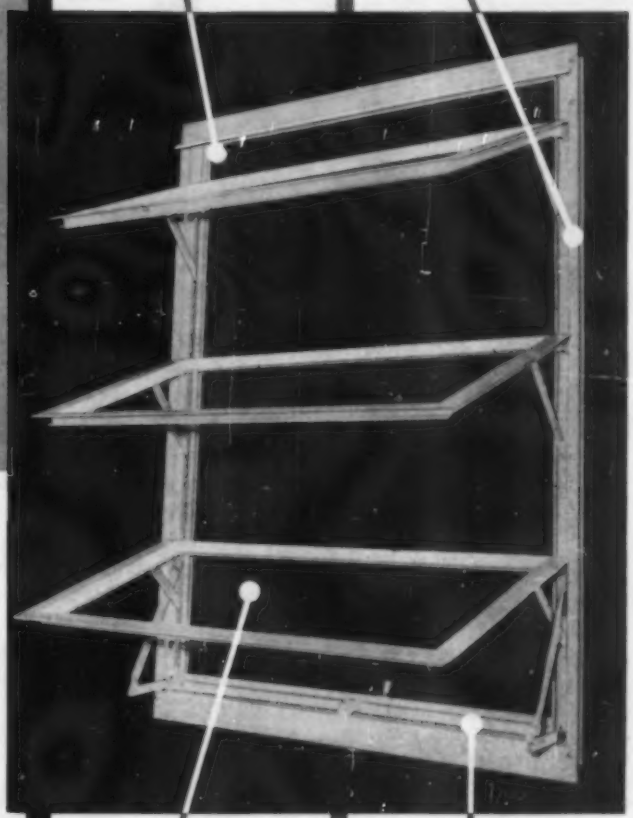

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The Author: A brilliant writer, Mr. Birren is also a rare combination of capable scientist and creative artist. His clients read like the blue book of American activities, from House and Garden Magazine to General Electric — from the U. S. Navy and Coast Guard to the Department of State (to represent the United States in International conferences on color).

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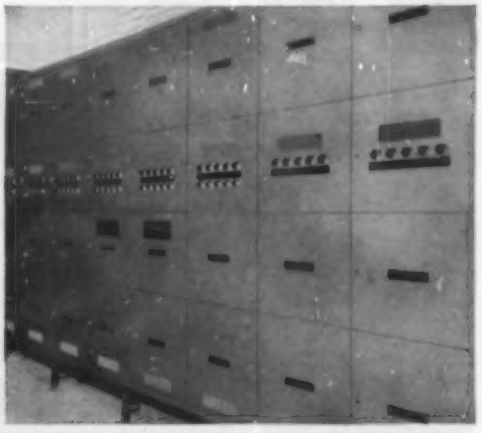
Electric-electronic controls have been specified again by telephone engineers . . . this time in Milwaukee for the new and existing Headquarters buildings of the Wisconsin Telephone Company. Electric-electronic controls are used throughout the new six-story addition (foreground), completed late in 1954. Modernization of the nineteen-story older building is in process — electric-electronic controls have been installed on eight floors to date. The speed, flexibility, accuracy, and reliability of electrical equipment were big factors in the selection, plus savings on original cost of the controls, installing labor and materials, and maintenance.

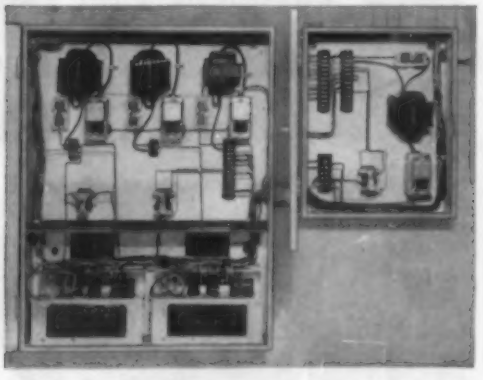
Architects (both buildings): GRASSOLD-JOHNSON & ASSOCIATES. *Consulting Engineer* (new building): JOSEPH VOLK, deceased. *Consulting Engineers* (remodeling old building): LOFTE & FREDERICKSEN. *Heating Contractors* (both buildings): PAUL J. GRUNAU CO. *Ventilating Contractors* (both buildings): REINKE & SCHOMANN, INC.

In new addition, all radiators, convectors, and reheat coils are individually controlled with electronic outdoor reset on the hot water supply. Remodeled building has Barber-Colman controls for ventilation, reheating coils, and direct radiation.

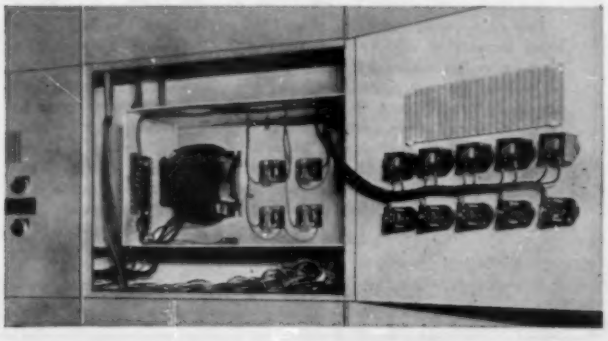


Modern "Control Center" (above) in remodeled building serves as central junction box, houses prewired accessories, numbered terminal strips, indicating lights, remote starting buttons, etc. A Uni-Flo "VF" Grille provides ventilation of each compartment.

Another "Control Center" (below) in new building serves as "nerve center" to speed field installation, expedite checking, simplify revisions and servicing. It's the fast, cost-saving method for modern buildings.



(Below) **One of twenty-four** compartments comprising the 8' x 16' "Control Center" in remodeled building. This type of installation exemplifies latest cost-saving techniques in automatic control system engineering.



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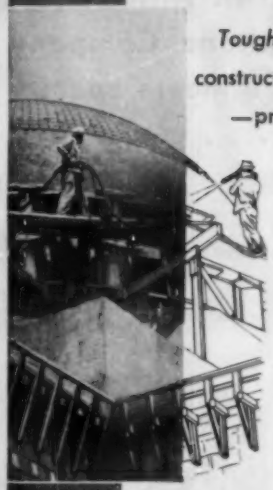

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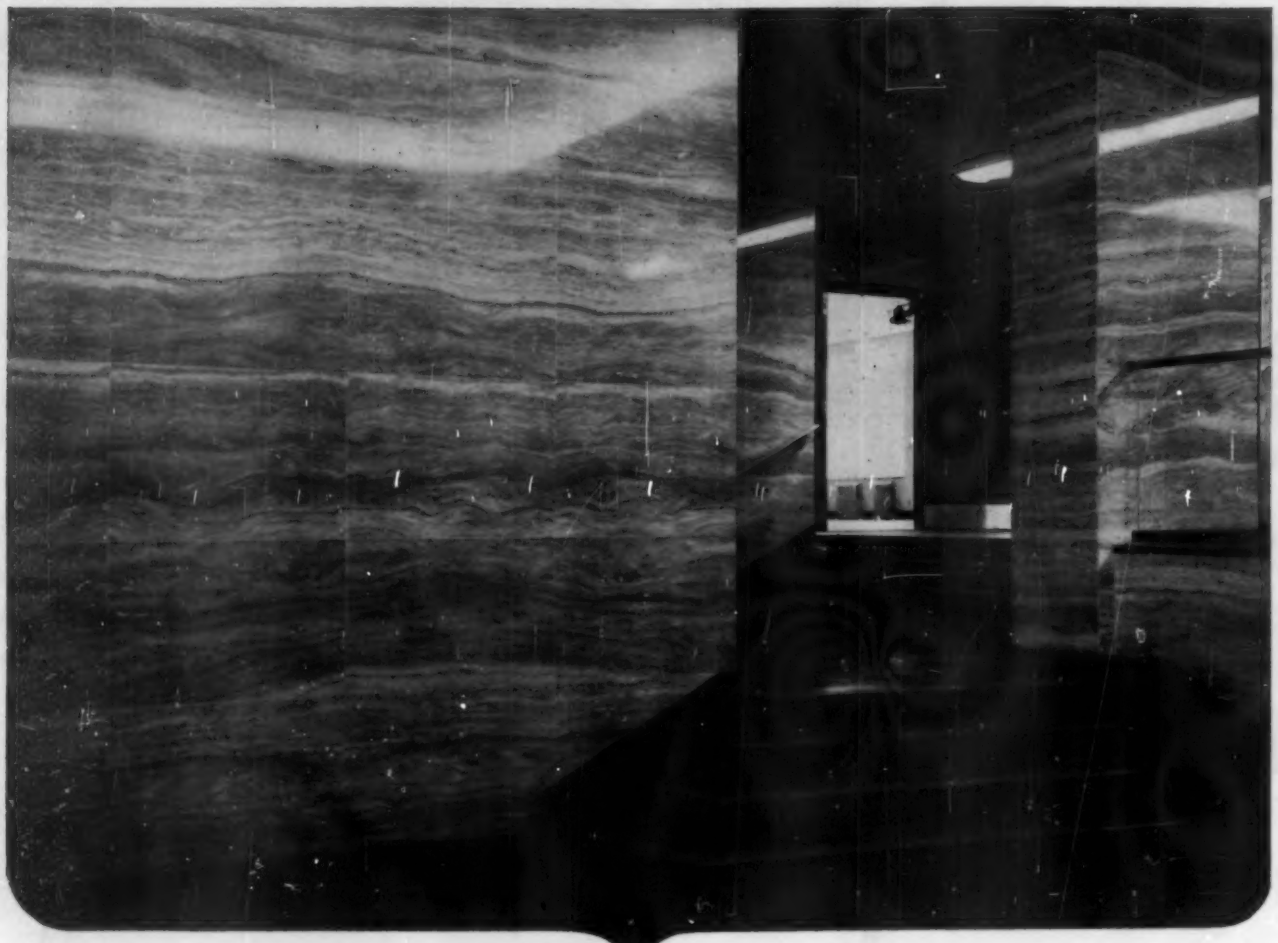

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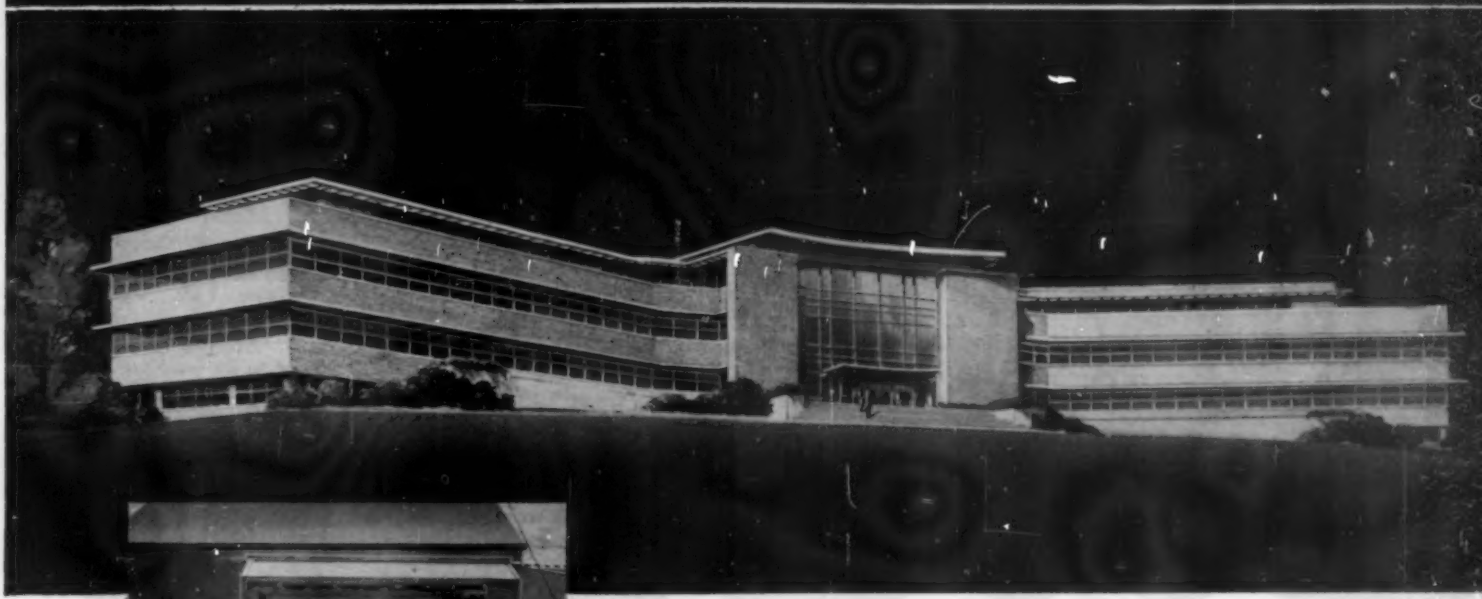

* Photo above shows actual testing of 6' x 6' aluminum window at the University of Miami, Florida. This was a wind and water test to determine air and water leakage of entire assembly with winds of 100 mph accompanied by the equivalent of 4" of rain per hour, sustained for 10 minutes against the surface of the window.

Top photo:
Standard-Vacuum Oil Co. Office Bldg.,
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Architects: Eggers and Higgins
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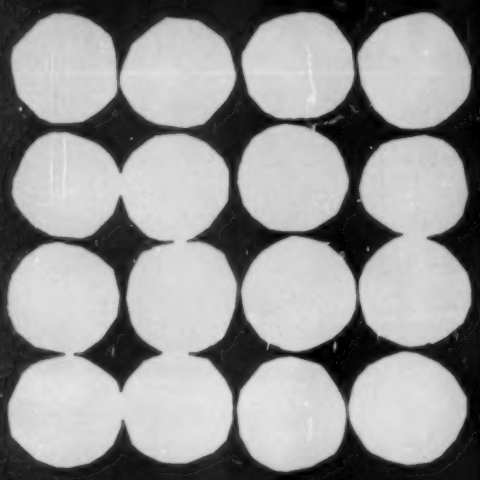

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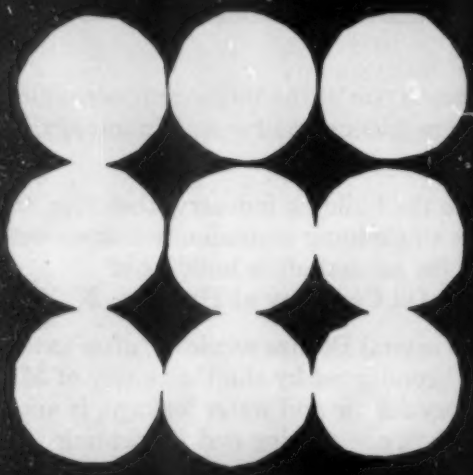

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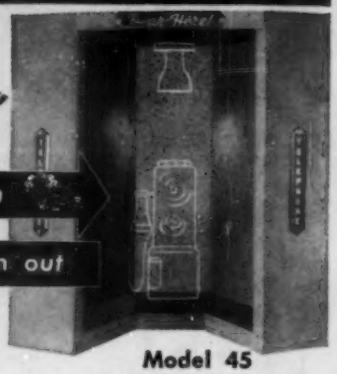

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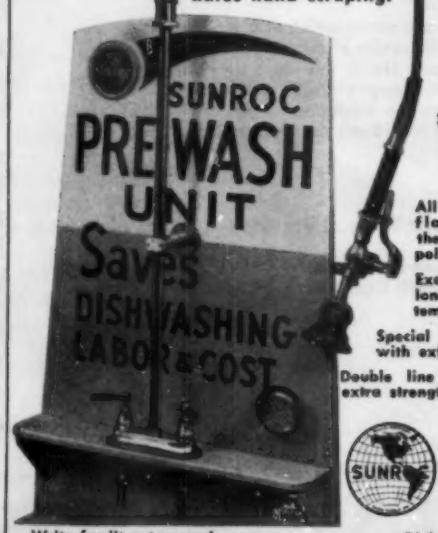

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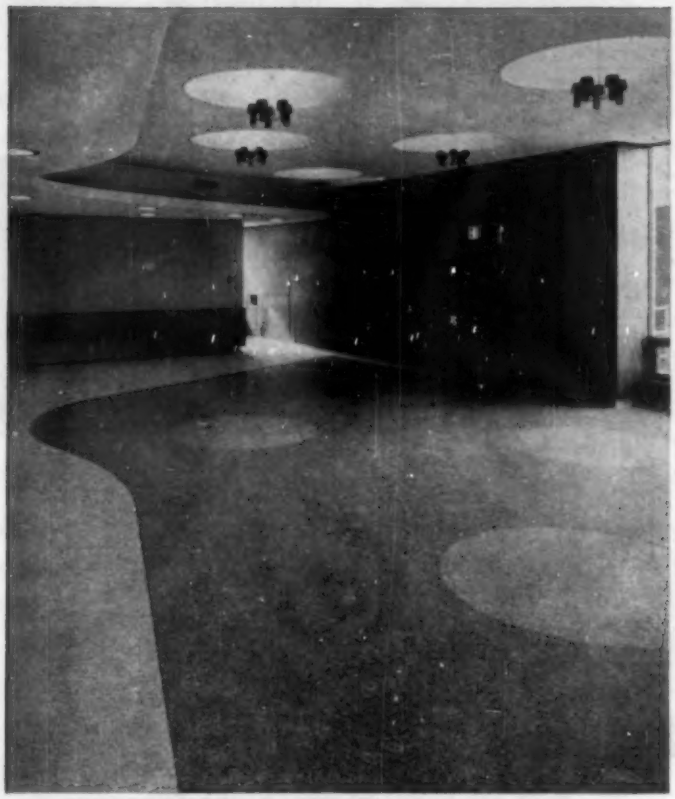

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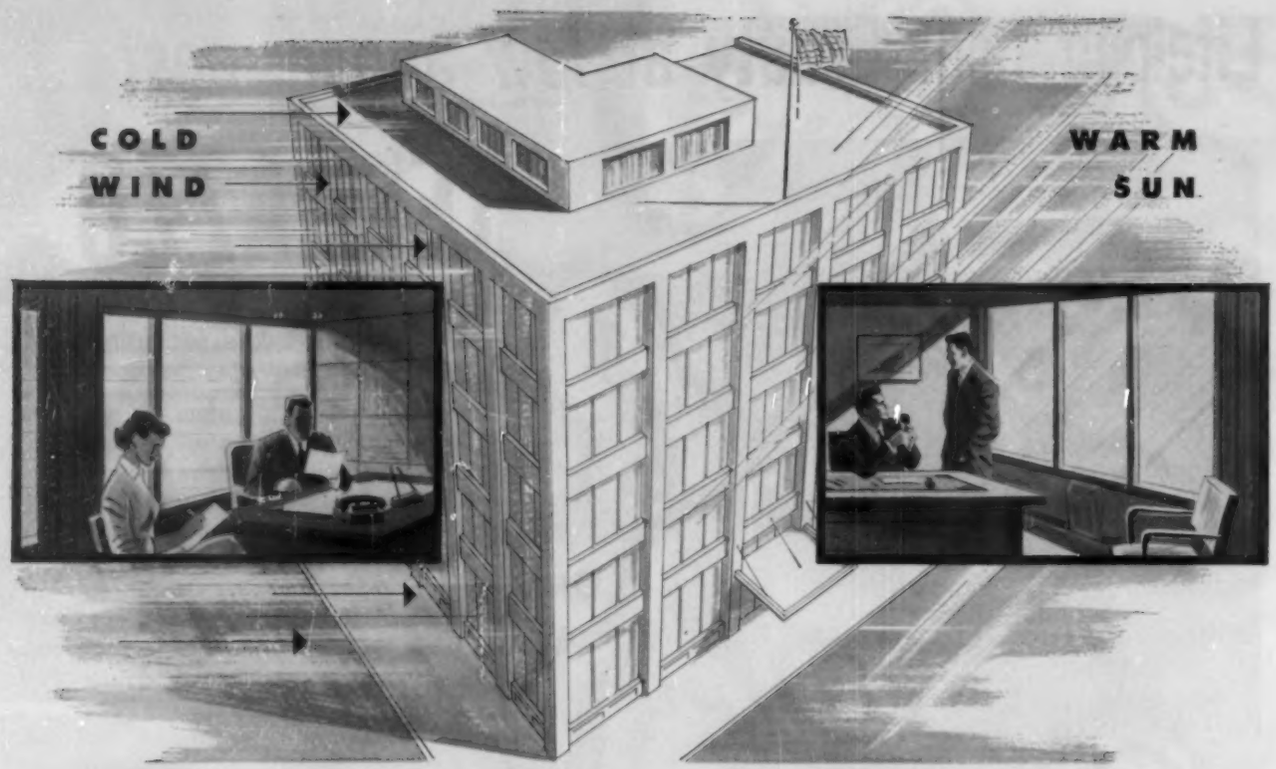

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P.S.

I was greatly saddened, returning from a trip recently, to learn of the death of George Howe. One of the truly penetrating, calm, and dispassionate minds of our time in our profession, he had led an extremely active life through many phases of practice, teaching, and again practice in later years. One had become so accustomed to trenchant comments from George on almost any subject of current controversy that it will seem strange indeed—and very grievous—not to be able to quote him anymore.

I got to know George Howe rather late in his long and varied career, and never with any great degree of intimacy; yet I felt that he was a real friend, with whom I could talk on any subject with the frankness one allows oneself only with such friends. I think many people felt that way with him, and I believe that characteristic is one of the greatest any human being can have.

I don't think George was ever fully pleased with any work of architecture he completed. I suppose he will be remembered best for the Philadelphia Savings Fund building in Philadelphia, done with Bill Lescaze. What really tickled him more, I believe, were the accolades resulting from the design of the Clara Fargo Thomas house, "Fortune Rock," daringly cantilevered over Somes Sound, Maine. At the time it was done it was tremendously influential in the move toward what Talbot Hamlin calls "character through materials and construction." And I know that he was not displeased with the Philadelphia Bulletin building, done with Robert Montgomery Brown, now nearing completion. He recognized his earliest work for what it was: tasteful, somewhat romantic, well planned, and well detailed. It also had a strong influence. I remember walking down a street in St. Louis with him one evening and, as we passed a stone-and-timber house, his nodding toward it, smiling, and saying, ". . . early Mellor, Meigs & Howe school."

By the time of the '30s, Howe was an avowed "functionalist." Writing for *Pencil Points* in 1932, he said, "There is more real beauty in one straight line of a well-designed functional country house, standing in bold relief against the irregularities of nature, than in all the soft contours recreated by the romantic in painful imitation of the peasant's handiwork." The need in architecture for "a common language, which every activity will serve to enrich, a language such as writers possess, whose imaginative medium is stored with every contemporary human experience," seemed always important to him. Until we find that common language, he said, "we shall remain a generation of polyglot headwaiters without the ability to express a great thought in any tongue, ancient or modern."

But that common language never meant to him an adherence to any rigid school of thought. In the little collector's item I was privileged to publish on this page in January 1954, entitled "It Was a Great Symposium," Howe poked kind fun at the *avant-garde* Director of Architectural Exhibitions, the *avant-garde* Critic-Historian, the Dean, the Observer of the Skyline, the American Mercury, the Acolyte, and the self-styled Saviour.

As personal characteristics, one remembers both the quick wit and the quiet pleasure in life that remained with George Howe through his career as architect, public administrator, and educator. As example of the first, I have told many times the story of Howe replying to Frank Lloyd Wright at the Princeton Bicentennial Conference in 1947. At an informal evening discussion, Wright had been explaining graphically the difference between the Oriental and the Occidental mind. "The Easterner," he said, "approaches a problem like this . . ." and he marked two points on a blackboard, drawing from one a long, circling line which went around and around the second point until it finally approached and touched it. "And the Westerner," he explained, "approaches a problem like this . . ." from one point to the other he drew a direct straight line. Then, having finished his discourse, Wright totally changed the subject and casually asked before he sat down, "What is this AIA—this union—I hear all of you architects talking about? Can any of you explain it to me?"

Howe rose and went to the board. "I'll explain that, Frank," he said. "The AIA believes in a code of professional ethics, which goes like this . . ." and he repeated Wright's long curved line from one of the points on the blackboard to the other. "But on the other hand," he continued, "most architects believe in self-preservation, and that goes like this . . ." whereupon he repeated Wright's quick straight line from one point to the other.

To understand his pleasure in living and in doing whatever was the task of the moment, one would have had to know George Howe. In St. Louis, as professional advisor to the Jefferson Memorial Competition, he *enjoyed* St. Louis—and the people in that city loved him. In Rome, as architect-in-residence at the American Academy, he *enjoyed* Rome. The one person I know who loves Rome more than any other—Bruno Zevi—told me that he had never seen any other person, not a Roman, learn the city and its pleasure so well. He enjoyed his work with the Public Buildings Administration, he enjoyed his five years as head of the Department of Architecture at Yale; he enjoyed being Chairman of the Penn Center Advisory Board for Design.

Howe, in short, enjoyed architecture, and he enjoyed knowing and working with his fellow architects. If his comments were at times biting, it was the sharpness of a member of the family concerned about the foibles of his kinsmen. What more could anyone ask as measure of a full life than pleasure in the accomplishments of that life, and many friends who have shared the pleasures and admired the accomplishments?

•

The trip from which I have just returned took me to Memphis, Dallas, and San Antonio—in each case to attend and take part in unusual local AIA Chapter meetings. If these visits are any indication (and I think they are), the vitality of local professional activity is tremendously increasing. In each case, the Chapter had an "issue" it was fighting for. In each case, someone in the Chapter was sufficiently alive to public relations to take advantage of a visiting fireman who might be quoted on the issue. The result was a series of interviews with newspaper people, to an extent I've never encountered before, and remarkable press coverage of the meetings.

In Memphis, where the architects have been urging the Mayor to hold a competition for a Fine Arts Center, they were able to draw to their meeting the Mayor, the ex-Mayor, and several possible candidates for the Mayoralty in the next election. In Dallas, the Chapter has been arguing with the Board of Education against stock plans for schools; there I got quoted on the disadvantages of stock plans. In San Antonio, the local Honor Awards Program received good coverage, and the continuing issue of a parking garage under Travis Park (which would mean, among other disadvantages, the loss of the park's fine old trees) was kicked around in the papers and on the radio.

•

As I finish this column, word comes in that Marshall Shaffer has died. I feel a great sense of personal loss, because Marshall had been a close personal friend for many years. Many people will write of his magnificent handling of the tricky problem of a government "advisory" agency. I think further back, to the days when he was teaching at Pratt Institute, to the enthusiasm of his pupils learning for the first time that architecture involves people. I remember an out-of-this-world night in New Orleans with Marshall and Al Aydelott. I think of his unrestrained voice booming across a restaurant or up a hotel corridor. And I recall his great generosity in promoting the work of others. He was, in the true sense, a character—"a person characterized by notable traits."

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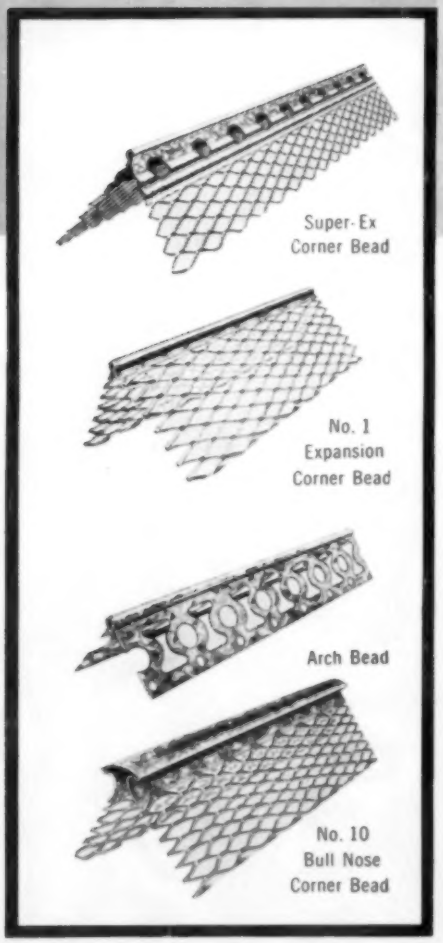

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